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New Method of Propelling Steam Vessels.

Kinkle & Hubbe's new method of propelling steam vessels consists, generally, in the reactionary power of water. The propulsion of steam vessels by means of wheels and screws has probably attained its highest perfection, the velocity of ships propelled by these means not being capable of a great increase, for the reason that great velocity in rotating wheels or screws necessarily reacts upon the vessel and requires a proportionate increase of strength in the construction of the hull, which again tends to counterbalance the velocity of the moving vessel, while, by the method of propulsion adopted by the inventors, no reaction upon the ship will be perceptible, however great the velocity which a vessel thus propelled may attain.

That the reaction of water forced out of pipes from a ship may be used as a propelling power is demonstrated by the fact that a few vessels, constructed in Europe on that principle, have actually been used for traveling purposes, and are still in use.

The construction adopted in these vessels consisted mainly in placing in the center of the ship a turbine wheel moved by a steam engine which discharged two jets of water simultaneously out of two nozzle pipes, one on each side of the vessel; but the discharge pipes (or nozzle pipes) on either side of the turbine wheel, being necessarily different in length, the power thereby exerted on one side of the vessel is greater than on the other, which impedes the proper steering of the vessel; and, again, the propelling power itself is limited by the two discharge pipes only, all of which is obviated by this invention. The principal features of this invention are as follows: A series of bent pipes are inserted through the sides of the hull, below or above the water line, as required for the particular use of the vessel, the said pipes being adjustable by a mechanism in such a manner that the parts of the pipes on the outside of the vessel may be turned aft, forward, or perpendicular.

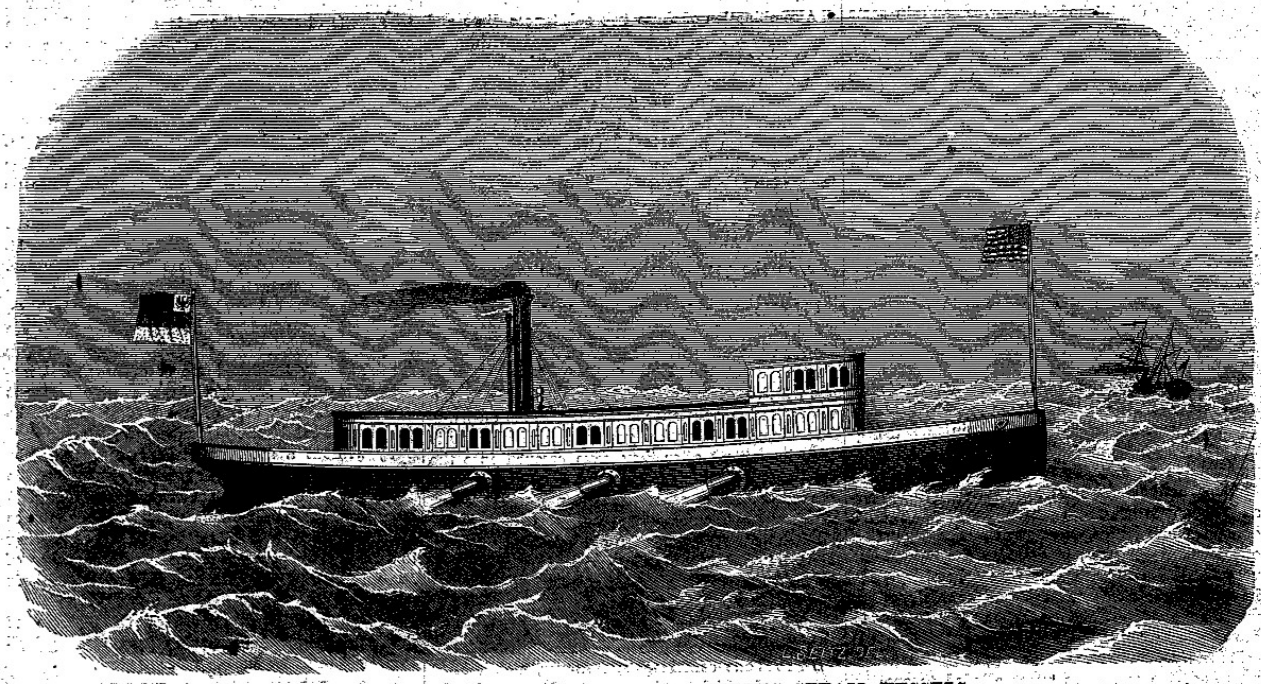
An equal number of such pipes are inserted on each side of the vessel; all of them are properly packed in stuffing boxes. The end of each of said pipes in the inside of the vessel is connected with a force pump, and each pump is driven by a small steam engine. Each of said pumps is supplied with water by a suction pipe through the bilge or bottom of the vessel, and all the engines are supplied with steam from one boiler, in such a manner that a supply of steam may be cut off from each engine separately, or from any number of engines, or from all of them, as may be desired.

The inner ends of the outboard pipes are connected with a mechanism by means of which the discharge pipes on either side of the vessel may be turned simultaneously in any direction at the will of the engineer or other person having charge of said mechanism.

Thus, if it is desired to move the vessel in a certain direction, all the nozzle pipes are placed in the opposite direction, and the water being forced out of them strikes or reacts upon the water in which the vessel is floating, and thereby causes the motion of the vessel.

It is claimed that vessels constructed on this principle attain a much higher rate of speed, with a lesser consumption of coal than is the case with paddle wheel or screw steamers, that the steering of this new vessel is easier and more certain, that the shaking of the vessel (caused by the action of the engine on the screw or paddle wheel) is here entirely avoided. These and other advantages make it desirable to test boats constructed on that principle, and for that purpose the inventors have designed an experimental boat on a large scale, which they intend to build and to sail with it on the Hudson or East rivers, and which is to attain a speed of 25 or 30 miles in an hour.

The plans and drawings may be seen at the office of Mr. Charles Wehle, No. 290 Broadway, in this city, where those interested may receive further information.

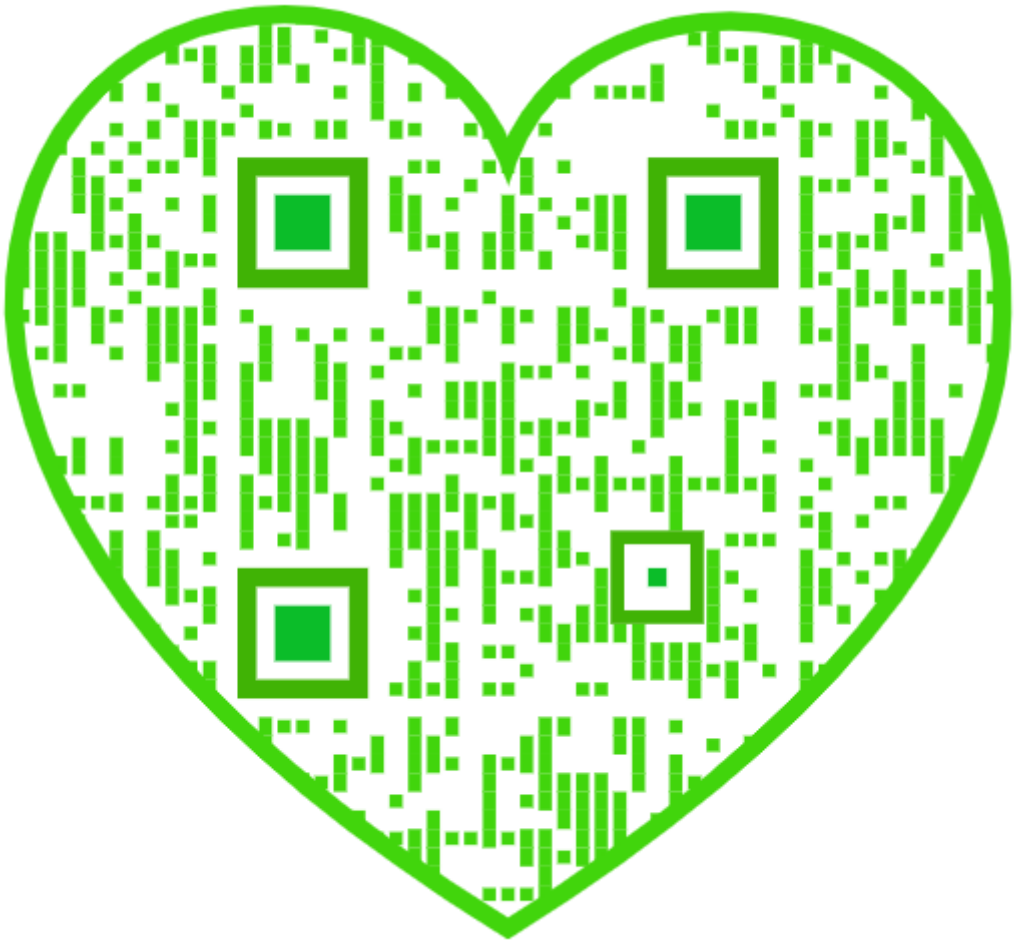


KINKEL & HUBBE'S METHOD OF PROPELLING STEAM VESSELS.

Iron and Steel Railroad Tracks.

The London *Railway News* says: "Mr. Williams furnishes some details which will serve to show the enormous wear and tear to which the rails of our leading lines are subjected. On the section between Hatfield and London, on the Great Northern line, 57,536 trains, carrying 17,760,926 tuns, destroyed in three years the rails laid down in 1857. Some heavier rails, laid in 1860, were worn down in three years by 65,529 trains, and 13,484,661 tuns. In the case, however, of a section of railway between Bury and Accrington, 62,399 trains and a gross tunnage of 12,451,784 passed over rails which lasted seven and a-half years, or two and a half times as long as those of the Great Northern, with about an equal amount of traffic. Again, at Bolton, it required 203,122 trains, and 38,803,128 tuns to wear out the same description of rails in seven and a-quarter years. The cause of this rapid wearing out of the rails of the Great Northern as compared with those of the other lines, is due, apparently, to the greater speed of the trains. In the case of iron rails, as in the delicately constructed mechanism of animal life, it is 'the pace that kills.'

"Two steel rails of twenty-one feet in length were laid on the 2d of May, 1862, at the Chalk Farm Bridge, side by side with two ordinary rails. After having out-lasted sixteen faces of the ordinary rails, the steel ones were taken up and examined, and it was found that at the expiration of three years and three months, the surface was evenly worn to the extent of only a little more than a quarter of an inch, and to all appearance they were capable of enduring a great deal more work. These two rails had, during the period of little more than three years, been exposed to the traffic of 9,550,000 engines, trucks, and carriages, and 95,577,240 tuns. It is an amount of



traffic equal to nearly ten times that which destroyed the Great Northern rails above referred to in three years. The result of this trial was to induce the London and Northwestern to enter very extensively into the employment of steel rails, and we learn from Mr. Webb that in a short time arrangements will be made at Crewe for the production of three hundred and fifty tuns of steel per week, of which three hundred will be used for rails; and that at the present time there are about fifty miles of steel rails in use on the line, and three thousand tuns of steel-headed rails."

THE DOMESTIC SOURCES OF CHOLERA AND THE MEANS OF AVOIDING THEM.

At the present time, when the influences of this terrible pestilence are manifest in all sections, the above subject is one of the most important that can engage the attention of the people. We observe that the members of the medical profession are at variance in their opinions as to the contagiousness of this fearful disease, but they are unanimous as to its local causes, and the measures necessary to prevent it. These latter may be summed up in these three words—*Cleanliness, Pure Air,* and *Disinfection.*

The history of the epidemics of cholera, in almost every quarter of the world, demonstrates most decidedly that where these preventive principles have been scrupulously attended to, there the disease has been greatly diminished in degree, and in some places wholly avoided, and that it invariably displays its power most vigorously where they are neglected.

The first of these, cleanliness, is an idea which the most ignorant can comprehend in its fullest extent, implying as it does, simply, the careful removal of all kinds of dirt and filth from the premises and persons of the household, and the keeping of every thing about the house sweet and clean.

The matter of pure air involves the principles and practice of ventilation, which is a subject rather less understood by people generally, though of equal importance with the others, and easily attainable by various means. The removal of foul air, and the supply of fresh, pure air, are the points involved therein, for which various methods have been suggested—a further allusion to which we may make on a future occasion.

In many respects the practice of disinfection is the most important of all these preventive measures. It is universally admitted by those best informed upon the subject that the foul gases, generated by the putrefaction of animal and vegetable matters, are the most active and abundant causes of this disease and of many others. To prevent the decomposition of all such substances, and thus avoid the production of the poisonous gases, is therefore a matter of the very first importance. Modern chemistry has happily supplied us with materials for this purpose, which are easily obtained, and when properly applied are certain in their action.

It is a singular fact, that among the most active sources of the poisonous gases alluded to are the exhalations and excrements of our own bodies. Thus we are told by the Council of Hygiene of the New York Citizens' Association, that "Careful observation has established the fact that neglected and putrescent excrements and the effluvia from privies serve to localize the outbreak of cholera, and more fatally than almost any other class of nuisances."

The Consulting Physicians of the City of Boston tell us in a recent public document, "Among the causes which act upon the human system to induce the disease (cholera), are exhalations from the bodies of human beings in crowded residences, and unremoved excretions."

Dr. Greenhorn, of London, an eminent sanitarian, says, "An atmosphere impregnated with the products of fermenting excrements is at once the most obvious and most constant concomitant of cholera."

Dr. E. M. Snow, the distinguished Superintendent of Public Health, of Providence, R. I., tells us:—

In some conditions of the atmosphere, particularly when there is excessive heat and moisture, and when there is any epidemic influence prevailing, the impure air arising from these collections of swill and house offal is a most injurious nuisance and a prolific source of diseases. The danger is still greater when, as is frequently the case, the swill and offal are deposited in cellars or are thrown into privy vaults.

We might multiply to an indefinite extent the evidence of this singular fact, that these results of the vital operations of our bodies are a powerful cause of our own sickness and death, but our readers will doubtless be satisfied with the above extracts, and the question then arises, how are these consequences to be avoided? The answer is equally plain—by cleanliness and disinfection; and we are pleased to be able to state how the latter operation can be most effectively performed.

Among the rules laid down by the Council of Hygiene of the Citizens' Association, for the prevention of sickness in general, and cholera in particular, is the following: "Avoid and prevent effluvia from excrementitious matters, sewers, privies, and chamber vessels. Frequently and thoroughly disinfect these sources of fever poison." How to do it is therefore the important question.

The following is a list of the substances at present regarded by chemists and sanitarians as the most available and effective for the purpose.

Common lime is useful as an absorbent of moisture, and a preventive of the decomposition of some subtances.

Freshly-burned charcoal is a powerful absorbent of noxious gases, and to a certain degree a preventive of decomposition. It is well known that wooden stakes, whose surfaces have been charred by fire, when placed in the ground, will be preserved a long time.

A combination of these two substances, lime and charcoal, has recently been introduced with good effect, when finely ground together, in the proportion of one pound of charcoal to four of lime. This has received the name of "calx powder."

Carbolic acid, a product of coal tar, in the form of crystals, when pulverized and sprinkled over foul matters, is highly recommended. It may be used in solution also.

Sulphate of iron, commonly called copperas, when used in the same manner, is also a valuable disinfectant and antiseptic. It may also be used in solution, in the proportion of an ounce to a quart of water.

Chloride of lime has achieved a high reputation as a disinfectant, but for domestic use it is less available than those mentioned above. Its value for this purpose depends almost wholly upon the chlorine gas which it gives forth. This is not only in itself a very offensive substance, but as a gas it is only useful in decomposing other gases, with which it must come in contact after they have escaped into the air. This is like trying to catch a thief after he has run away. The other disinfectants will prevent the escape of the noxious gasses.

We here make no mention of any of the numerous advertised disinfectants, because their compositions are kept secret, and are, no doubt, chiefly made up of the substances herein mentioned, in great part, if not wholly, and are got up solely for the purpose of making money.

There is one combination, however, which is no secret, and which we have personally proved to be one of the very best compositions known for the purpose. It is called the "Ridgewood Powder," and being made up of several of the substances previously enumerated, it combines their deodorizing and antiputrescent properties in a very remarkable degree.

How and where to apply these poison preventives, is the question next in importance. In their report on epidemic cholera, the Council of Hygiene informs us, when speaking of domestic hygiene, that:—

In every private residence, tenant domicile, hotel, boarding house, public school, and place of resort, there should be a thorough examination of the local and house drainage—the stench traps, the cellars, the vaults, the cesspools, and privies. Immediate cleaning and disinfection should be enforced, and proper precautions against every source of domiciliary impurity should be adopted; and all privies, water-closets, sinks, and excrementitious matters should receive scrupulous care and thorough disinfection.

To facilitate this most important and essential sanitary measure, so that disinfectants may be applied in all the places indicated, without trouble or delay, and without exposing fecal or other foul matters to the air, an instrument has recently been introduced which may be used in any locality and by any person, even by a child, without the possibility of mistake or danger. It is called the "Ready Disinfector," and may be attached to any chamber vessel, water closet, privy seat, swill pail, or other vessel containing house offal, and the disinfecting powder applied by it without exposing their contents to the air.

This apparatus, the "Ready Disinfector," is a very simple and easily managed instrument. It has been approved by the New York Academy of Medicine, by which it was unanimously recommended to the consideration of the Metropolitan Board of Health.

The vast extent of the beneficial effects derivable from the general use of such an instrument may be comprehended by one fact, viz, that if employed for the disinfection of all water closets, chamber vessels, slush buckets, privies, etc., in cities like New York, Philadelphia, and Boston, not only would there be no odor arising therefrom in any dwelling, but all the sewers would likewise be completely deodorized, whereby one of the most potent causes of cholera, and many other diseases, would be entirely removed.

Any further information of the subject, either of disinfectants, or the mode of applying them, may be had by addressing Mr. John H. Keyser, No. 158 Ninth street, opposite the Bible House, New York.

It is not for the prevention of cholera alone that these sanitary measures should be universally adopted, but as against fevers of almost all kinds, especially those of the typhoid character, many disorders of the lungs, erysipelas, diarrhea, cholera morbus—in fact, all diseases derived from atmospheric impurities, which are known to medical men as *zymotic* diseases. There is no doubt that the enormous mortality of infants, which occurs everywhere, might be greatly reduced by careful attention to these ideas.

The Brazilian Exhibition.

We are indebted to Counselor Azambuja, Minister of Brazil, for the following particulars relative to this exposition, which is to be opened in Rio de Janeiro on the 19th of October, in the present year.

By the regulations and instructions of the managers, it appears that foreign machinery and implements are admitted and must be labelled "Foreign," and accompanied by the name of the manufacturer, and inventor, with the cost of the machine. They may be worked by the exhibitors, but may not compete for the premium, the space and steam power required being furnished free of expense; but, machinery requiring any special construction will not be admitted. The cost of transportation must be paid by the exhibitors. No machinery can be taken away without a special permit, and if, after the closing of the exhibition, they are sold, they will be subject to a duty of 1½ per cent ad valorem; but if re-exported will be free of duty. Free passes are furnished to the exhibitors. All persons wishing to exhibit must give due notice to the Minister of Brazil in New York, with full particulars of their machines.

The Minister informs us that the Empire of Brazil, is a field which our manufacturers of agricultural implements cannot afford to neglect.

The Rebuilding of Charleston.

The Charleston City Council has referred to a special committee the following proposition to rebuild the city. It is proposed to issue bonds of the city, drawing seven per cent interest, to all who may wish to rebuild, upon the following basis:—

When a lot is valued at $10,000, and the parties owning the same wish to build a store, warehouse, or dwelling, worth $15,000 upon it, it is proposed to issue to the parties $15,000 of city bonds at par, the city to take a bond and mortgage with insurance policies assigned for security, and as an additional safety and security for the city, the interest is to be paid semi-annually, and the parties borrowing the city bonds are to be required to pay the interest in advance, so the city can be sure of meeting the interest on these bonds. This would increase the revenue of the city taxes in the following proportions: A lot now valued at $10,000, yielding $175 taxes, would, with a building valued at $20,000 erected upon it, yield $525, or from $300 to $350 increase over the present tax.

CABLE BUSINESS.—There were twelve messages received at the New York Telegraph office for Europe in one day, for which the sum of $1,313 in gold was paid.

THE PRUSSIAN NEEDLE GUN.

We have received from an intelligent correspondent at Washington, who is thoroughly informed upon the subject, and has spent considerable time in Europe, the following observations upon the Prussian needle gun. In our next number we shall give an illustration of the working parts of this arm, to gratify the curiosity which its advertised success has aroused:—

The late European news proves conclusively that a very defective breech-loader, such as the needle gun, is a much more effective weapon in actual war than the best muzzle-loader.

The needle gun is a clumsy, unsightly, heavy, and expensive gun compared to many American breech-loaders, it is complicated in its parts, and delicate in its construction. The breech-piece, which contains the breech-loading mechanism, is enormously long, extending not less than eleven inches to the rear of the cartridge chamber. The bore of this breech-piece is enlarged to receive a hollow cylindrical plunger or breech-closer, about five inches long. The plunger is operated back and forth in order to open and close the breech of the gun, by means of a knobbed handle which slides in a longitudinal slot in the top of the breech-piece; this slot is widened for half its length from the front toward the rear, thus forming a shoulder to receive the knobbed handle and support the breech-closer when the gun is fired. Within the cylindrical breech-closer is a longitudinal steel pin which carries the needle, and is surrounded by a spiral spring. In the bottom of the breech-closer is a narrow longitudinal slot to admit the trigger to take hold of the needle pin. On the front end of the closer is an expanding steel ring or gas check, which performs its functions badly, as there is so much escape of gas that the gun cannot be fired one hundred rounds without being cleaned. There is also considerable escape of gas into the mechanism through the needle hole in the face of the breech-closer. This escape of gas soon fills the chamber in the cylindrical breech-closer, which contains the needle-pin and spiral spring, with a residuum of burned powder, and seriously impedes their action. To open the breech preparatory to loading, strike up with the hand on the knobbed handle of the breech-closer from behind the shoulder, and withdraw it to the rear; but now the soldier must be very careful in inserting his cartridge, lest he injure the delicate needle, which projects its full length into the opening, or lest the needle injure his own hand. To shut the breech the closer is shoved hard forward, and the knobbed handle thereof pressed down in front of the shoulder on the right hand side of the slot.

When the cylindrical breech-closer is shoved forward, the trigger, having taken hold of the needle-pin from below, retains it to the rear, and thus compresses the spiral spring, so that the simple act of closing the breech cocks the piece, and it is only necessary to pull the trigger to fire it. This arrangement is a convenient one for the soldier, and facilitates the firing, but it is an objectionable feature in a military arm, because when loaded it must necessarily remain at full cock. It is true there is a means provided for locking the needle-pin in this position to prevent accident, but if the soldier should forget or neglect to avail himself of it, then serious accident is liable to take place at any time.

The ammunition for the needle gun is complicated, expensive, and difficult to make up, considerable special machinery being required for that purpose. The ball is contained in a small papier-maché cup or sabot, to the base of which is attached the igniting charge, consisting of a friction wafer; the needle must penetrate the whole length of the powder charge before it reaches the fulminate; thus the powder is ignited forward instead of at the rear, as usual. This is believed to be advantageous to the range of the piece. The needle gun cannot be fired more than half as many rounds per minute as most of the American metallic-cartridge guns. There is no denying, however, that the needle gun is proving itself a truly formidable weapon in the hands of the Prussian soldiers, who have been educated to its use for more than twenty years; but its success proves nothing in favor of the needle-gun as a specialty, while it proves everything in favor of breech-loading as a principle. If the Austrians had been armed with good breech-loaders, the results of the conflict would have been very different from what they are. The writer spent seven months in 1859 making trials with a breech-loader before the committee in Vienna. The report strongly urged the adoption of my arm for the cavalry, to be extended to the infantry later. That recommendation was never complied with by the War Department. From that date until this the writer, either in person or by an agent, has never ceased to urge upon the attention of the Austrian authorities the importance of breech-loading arms, both large and small. What must be the present feelings of the Austrian Emperor toward those of his officials to whom he assigned this important subject for examination and decision, and who have thus long neglected to act, wanting either the capacity or courage to arrive at a decision in favor of any one of the many inventions proposed?

It is stated that all the great powers are taking steps to obtain needle guns. This report is totally without foundation; all the great powers, this country included, being thoroughly familiar with the principles of its construction, and having pronounced it totally unfit for military purposes. The needle gun which the Emperor Napoleon is said to have received some years ago, and placed in his cabinet of curiosites, is very properly bestowed, for that is sure to be its final destination. The Prussians adhere to the needle gun only because it is Prussian in its origin, and may continue to do so with impunity until compelled to abandon it by the adoption of a better arm by other governments.

The Prussians are beating the Austrians because of their superior arms, and the Austrians are, at the same time, beating the Italians for precisely the same reason; the No. 1 rifled musket of the Austrians being as much superior to the heterogeneous collection of low-priced guns with which the Italians are armed as the Prussian breech-loader is superior to the Austrian arm. The Italians are brave as any troops in the world, and are now inspired with a degree of patriotic enthusiasm which ought to render them invincible if they were only armed with a good breech-loader. It does not seem to be generally known that all the Prussian field artillery are also breech-loaders. These guns are a combination of the Prussian and the Broadwell systems, consisting of the Kreiner double-wedge for closing the breech and the Broadwell gas-proof principle.

Breech-loading artillery and small-arms having been adopted, it only remains to introduce the Gatling gun to complete the national armament. The Gatling gun is a revolving battery, capable of throwing two thousand missiles per minute when using his compound ammunition, and one hundred half-lb. balls when using simple ammunition. This gun is designed to occupy the middle position between artillery and small-arms; it is destined to supersede the old flank defense howitzers, and to be extensively used in the field for defending fords, bridges, etc.; it will also, no doubt, be used for boat howitzers in the navy. The recent successful trials with this gun at Fortress Monroe astonished and gratified all who witnessed them.

Success in war is no longer a question of numbers, nor of courage and discipline on the part of troops; nor yet of military genius and experience on the part of leaders; but rather one of arms; and this will continue to be the case until equality of armament shall restore the old relations.

INSURANCE AGAINST STEAM-BOILER EXPLOSIONS.

We are gratified to learn that this subject is beginning to attract the attention it deserves. In the eleventh Annual Report of the Insurance Companies of Massachusetts, we find the following:—

"Another very important experiment has been conducted to a successful issue in the mother country. Steam boilers have always been a terror to timid fire insurance companies, and the enterprising proprietors of the grand motor of modern civilization have had to pay a very excessive premium for indemnity against its fire damages, while they insured themselves against its hot water.

"In 1850 there was established in Manchester, England, an association for the prevention of boiler explosions. The plan was to employ the best science extant to avoid the causes which lead to these frightful and destructive accidents, and to establish a vigilant supervision.

"Each boiler, we believe, required the payment of one guinea per annum to the fund of the association. A detailed annual report was made of the proceedings of the association, with statistics in regard to the boilers under its charge, and likewise in regard to those not inspected by it. The success of this experiment in diminishing the relative number of those accidents, and bringing steam proprietors better to understand the nature and laws of the force in their employ, soon led to the formation of other associations, not only in Great Britain, but in other countries. It has at last become so decisive that the association now offers for half a guinea per annum, in addition to the guinea already paid, to insure against loss by explosion the boiler itself and surrounding property to the amount of £300. This is less than half the average annual premium of the mutual fire risks in Massachusetts; and in relation to the whole expense of the membership in the association, where it insures, the premium is not half what is charged by stock companies for insuring risks comprising steam boilers.

"The value of this positive discovery to the vast steam interests of this country, if it should ever become generally known, would not be less than that of the discovery of petroleum or a new continent. Men of practical science now believe that boiler explosions, especially those of the most destructive sort, are wholly unnecessary, and easily prevented. What is wanted is a steam boiler insurance company which shall also act as a board of caution and prevention. The experiment of Manchester shows that the principle of mutual insurance is particularly applicable to this specialty, and, encouraged as it might be by a State guaranty, it would result in saving far more than half of what has now to be expended in so imperfectly insuring this most important species of property."

We are very happy to announce that this suggestion is being carried out. Some of the leading engineers of this city have given their support to the formation of a company to insure against accidents and loss occasioned by the explosion of steam boilers, as will be seen by reference to our advertising columns.

An Inefficient Boiler.

A correspondent—H. M. C., of New Jersey—says he has a horizontal cylindrical boiler, two feet in diameter, ten feet long, containing fifteen two-inch flues, which does not draw well, the tubes being of too little capacity. The smoke passes under the boiler and returns through the tubes, being discharged into the smoke stack over the furnace door. He proposes to relieve the tubes by constructing a brick arch from the rear end of the boiler, over its top, to connect with the smoke box at one end and the chimney at the other. It seems to us that it would cost less and be more efficient to turn the boiler end for end, and convey his smoke directly through the tubes without return. The proposed arch would render his tubes useless, and his boiler would be merely a common untubed boiler. The trouble, we think, is that the draught is not sufficient to control the double passage of the smoke. If it passed directly through the tubes, their capacity would probably be found sufficient.

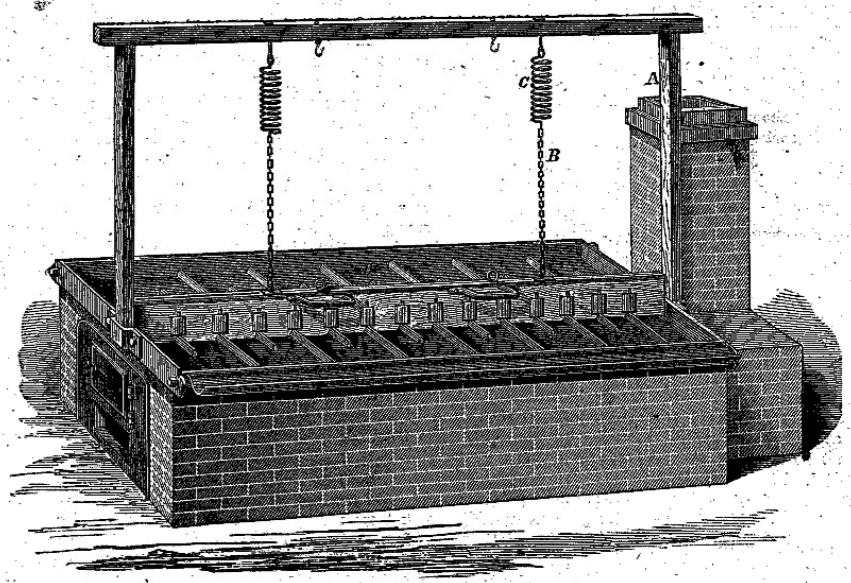
M. GRIPON has presented a note to the Academy of Sciences, "On the Conducting Power of Mercury for Heat." Experiments made after Peclet's method showed that if the conducting power of silver = 100, that of mercury = 3·54. It stands, therefore, the last of the metals, and a little before marble and gas coke. The author mentions that in this case the conducting power for heat and for electricity are very different, the former being 3·54, the latter 1·80.—*Mechanics' Magazine.*

PETROLEUM IN ENGLAND.—There appears to be good reason for supposing that an abundant supply of petroleum exists in the rocks of England. It is stated that the surface indications of various parts of Shropshire lead to this inference. Experimental borings are already in progress. The oil pit which has been sunk at Leeswood Green, in Flintshire, continues in active operation, and is increasing in product.

Improved Sorghum Evaporator.

The process of making sorghum sugar is very greatly expedited by the many machines and apparatuses introduced for the purpose. Sorghum sugar as first made was of a greenish-yellow color, not half drained, but we have seen samples that would equal New Orleans sugar in appearance.

The engraving represents a new evaporator which is claimed to be a valuable improvement on those generally used. Defecation is more thorough, and the removal of the scum is facilitated, while the danger of burning the sirup is obviated. The pan is made of cast iron, formed in sections. The inventor states that he tried sheet iron, but found that he could not increase the heat beyond 220 deg. Fah. without burning the sirup, and at that temperature the mucilage was not separated from the juice; in fact, not thoroughly until about five degrees hotter—it settling to the bottom and adhering there. With cast-iron pans, however, this trouble was not experienced, and the heat could be raised to the right point, when the mucilage rose to the top and was taken off with the scum, leaving the bottom clean. The several sections can be at any time added to increase the length of the pan, they being held together by bolts passing through lugs.



RIGGS'S SORGHUM EVAPORATOR.

The skimmer is very convenient, being suspended from a frame, A, by chains, B. The chains are attached to springs, C, which hold the skimmer up when not in use. When needed, a slight pressure brings it down over the pans. The claim covers an inclined scum trough with a depression in the center covered by a strainer, but in the model before us this feature is not shown. The ledges, D, cause the juice when boiling to flow back and forth in currents through the whole length, and the scum is deposited as fast as formed on the coolest side, which is arranged to be the scum trough.

The whole affair is set on a brick arch, and is convenient of access in all parts. It is claimed to be economical in the matter of fuel, and safe with proper management.

It was patented by J. F. Riggs, of St. Joseph, Mo., through the Scientific American Patent Agency, on July 3, 1866. For further information address Messrs. E. R. Brandow & Co., who are manufacturing the apparatus at the above place.

Precipitation of Metals from their Saline Solutions by Means of Magnesium.

M. Roussin has just published a paper on the action of magnesium on metallic solutions, and on its application to toxicological researches, which shows that magnesium is particularly well adapted for the precipitation of other metals from solutions of their salts. It is a general principle that one metal will precipitate from a saline solution any other which is less readily oxidable than itself, but some metals, by no means among the most oxidable known, had nevertheless, when M. Roussin began his researhes on this subject, resisted all attempts to precipitate them by the contact of another metal with their saline solutions. With two exceptions, however, all the metals alluded to are precipitated in the metallic state by magnesium, the two exceptions being chromium and manganese, which appear to be precipitated as oxides. Among the metals which M. Roussin has precipitated in the metallic state, by means of magnesium, from slightly-acidulated solutions of their salts, are gold, silver, platinum, bismuth, tin, mercury, copper, lead, cadmium, thallium, iron, zinc, cobalt, and nickel. The precipitated metals, when washed from the saline liquid and then dried and compressed, possess a very remarkable degree of brilliancy. Iron, cobalt, and nickel, so precipitated, are highly magnetic; zinc takes the form of a large spongy mass, which the least compression renders brilliant. Magnesium does not precipitate aluminum at all, and chromium and manganese, as already mentioned, it precipitates as oxides. It does not precipitate arsenic or antimony, though it decomposes their salts, the arsenic or antimony flying off in combination with hydrogen. M. Roussin shows that great advantages result from the substitution of magnesium for the metals ordinarily employed in toxicological researches for the detection of these and other metallic poisons; but into that part of his subject it would be beyond our province to follow him. His only further statement respecting magnesium calling for mention here is one relating to its use as a voltaic element. "The foregoing qualities," he says "encouraged the hope that a substitution of magnesium for zinc in ordinary piles would offer a great electro-motive force, and experiment confirmed this theoretical inference. A small plate of magnesium, 0·1 grain in weight, pladed beside a plate of copper in a small tube of glass of six centimeters cube, filled with acidulated copper, produced in less than ten minutes an electro-magnetic appearance, and illuminated a Geisler's tube ten centimeters long. If magnesium should ever become cheap, this would decidedly be the best way of producing electricty."

In a note to his paper, M. Roussin states that he has observed that a sodium amalgam, shaken up with an acidulous solution of a salt of chromium or of a salt of manganese, changes to an amalgam of chromium or of manganese, as the case may be, and that an amalgam of either of these metals, obtained in the manner indicated, when distilled in a current of hydrogen, after having been first carefully washed in acidulated water, leaves the pure metal in the form of a pulverulent sponge. The amalgam of manganese, he adds, is opalescent and crystalline; that of chromium more fluid, and less variable at ordinary temperatures. When the latter is heated in a small porcelain capsule in the air, as the mercury flies off in vapor it carries off mechanically with it particles of chromium, which take fire, producing a singular scintillation, which is best observed in a darkened room. At length the chromium remaining in the capsule suddenly becomes incandescent, and burns to oxide.—*Mechanics' Magazine.*

Sea-going Monitors.

Captain Fox, Assistant Secretary of the American Navy, has reported to his Government upon the performances of the *Miantonomoh* at sea. His report is dated Queenstown, June 16, 1866, and contains, among others, the following remarks on monitors as cruisers: "Can the monitor style of iron-clads, invented by Captain Ericsson, be so constructed as to make them efficient fighting, sea-going cruisers? The facts with regard to the behavior of this vessel in a moderate gale of wind and heavy sea, when a frigate would find it impossible to use her battery, are as follows:—With head to the sea she takes over about four feet of solid water, which is broken as it sweeps along the deck, and after reaching the turret is too much spent to prevent firing the 15-inch guns directly ahead; with broadside to the sea, either at rest or while moving, her lee guns can always be worked without difficulty, the water which passes across the deck from windward being divided y the turrets, and her xtreme roll so moderate as not to press her lee guns near the water; lying in the same position, her 15-inch guns can be fired directly astern without interference from water; and when stern to the sea, the water which comes on board is broken up in the same manner as when going head to it. In the trough of the sea her ports will be liable to flooding, if required to use her guns to windward. This, then, would be the position selected by an antagonist which designed to fight a monitor in a sea-way. The turret guns of a monitor occupy a central position, where, notwithstanding the lowness of the vessel's hull, they are more easily and safely handled in a sea-way than guns of the same hight above the water in a broadside vessel. The axes of the bore of the guns of this vessel are 6½ feet above the water, and the extreme lurch, when lying broadside to a heavy sea in a moderate gale, was 7 degrees to windward, and 4 degrees to leeward—average five and a half degrees, while the average roll at the same time of the *Augusta*, a remarkably steady ship, was 18 deg., and of the *Ashuelot*, 25 deg.—both vessels being steadied by sail. A vessel which attacks a monitor in a sea-way must approach very close to have any chance of hitting such a low hull, and even then the monitor is half the time covered by three and four feet of water, protecting her and disturbing her opponent's fire. From these facts, not unknown to monitor men, and the experience we derived from the use of such vessels during the war, we may safely conclude that the monitor type of iron-clads is superior to the broadside, not only for fighting purposes at sea, but also for cruising. A properly constructed monitor, possessing all the requirements of a cruiser, ought to be constructed of iron, and have but one turret, armed with not less than 20-inch guns, two independent propellers, and the usual proportion of sail"—*Mechanics' Magazine.*

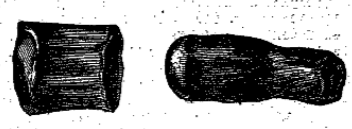
AN EXPERIMENT.—Two ounces of the explosive compound used in Roberts's torpedo, were experimentally fired off in a piece of tubing and drive pipe, yesterday morning, above ground. The drive pipe was broken into irregular pieces, and the tubing transformed into shoe strings. As demonstrating the probable effect of a subterranean explosion of the torpedo, it was a very satisfactory experiment.—*Titusville Herald, Aug. 9th.*

PERUVIAN guano, which is held at $60 per tun in gold by the agents of the Peruvian Government in New York, has fallen from $110 to $90 per tun in Alexandria. This is the most remarkable decline that any other commodity in our markets has sustained, and must be attributable to unnatural competition.

WEDGING OF GASES WHEN CONFINED.

In remarking on the experiments made in England with guns, or rather steel tubes open at each end, we said, in our issue of June 23d, that we could account for the velocity imparted to the projectile only on the hypothesis that the air, in the rear of the charge, confined between two felt wads, was compressed laterally, changing its particles from the spherical to the cone-like form, and thus acting as wedges, producing a transverse strain upon the walls of the tube, and forming, at the instant of discharge, a diaphragm of resistance, acting as a solid breech.

Although not certain of being correct in venturing this supposition, which, however, was the only hypothesis on which we could found a theory accounting for the results of the experiments, we have some additional evidence that this is the path for investigating these facts. We give, with this article, a cut representing two conical bullets fired from a Colt's revolving rifle of thirty-one inches length of barrel and "44" callber. The circumstances are these: One of our correspondents, H. W. S. Cleveland, of Danvers, Mass., in using the Colt's rifle at a target, left his wiper rod in the piece to attend to a temporary call, and when he returned, forgetful of what he had done, he fired his rammer at the mark. He fired again, and again, until he began to imagine from the appearance of the target that he had been shooting "wild." He found, on examination, that he had pierced the target with a queer shaped projectile. Disengaging it he found it as it appears



in the illustration. One ball, probably that which projected the wiping rod, had lodged in the barrel for want of projectile force to propel it and the rod beyond the muzzle. The next ball fired struck the lodged ball and drove itself against it, changing the form so much as to alter a cylindrical shot, with cone-like termination, into a cylinder, compressed in a concave form at the end which before was a cone, and expanding the barrel about ten inches from the muzzle. On the whole outward surface of this compressed cylinder the rifles or "gains" of the gun barrel are clearly impressed. It is evident, then, that the explosion, in connection with the obstacle interposed between the projectile and the atmosphere by the lodgment of the first ball in the barrel, changed the form of the projectile from that of a cylinder, convex at the top, to that which is represented in the illustration. The Colt's bullet offers only a portion of its surface to the effect of the discharge combined with the rifling of the piece. But this projectile is clearly marked with the "gains" of the barrel for its whole length. As this length is more than that given to an ordinary bullet, and, besides, as the illustration shows, the bullet is "upset" or contracted in length by the explosive force of the gas, it is evident that an agent differing from that employed in discharging a projectile from a gun was a means in producing this effect. The bullet, notwithstanding its compression, which changed its form from that of the ordinary projectile to that of a perfect cylinder perforated at one end, where before it presented a cone-like protuberance, is now a cylinder bearing on its entire length—which is almost as much as its original length—the marks of the rifling of the gun. It seems to be evident that another force than that of explosion, or percussion in a direct line, was exerted to produce this result.

Again, the appearance of the ball, which was lodged in the piece in advance of that which drove it out, is such that it is hardly possible to draw any other conclusion from its elongated and attenuated appearance than that the wedging of the gases against the walls of the gun tube contributed to compress the material of which it is composed.

Having some doubts as to the critical acumen of our informer, we had an interview with him, in which we plainly stated these doubts. We had the idea that possibly the bullet which showed the rifling on its surface was the first which left the gun, or, at least, the first which struck the target. Our doubts were removed when he told us that he found the double projectile in the target—a cedar post—the elongated bullet in advance of the other, and the two so firmly united that it required some force to separate them. Could the two bullets have changed their relative positions in the flight from the gun? This would be against the experience of gunners, or those who use the rifle. Undoubtedly the elongated projectile reached the target first, and its elongation was due to a compression it was subjected to before it reached the target; otherwise how could it appear lodged in the target in advance of the bullet which followed it, showing on its surface the rifling of the gun and the depression of the butt of the first bullet?

In regard to this singular matter, Mr. Cleveland makes the following statements:—

"The position of the first bullet in the barrel was about ten inches from the muzzle. To move that bullet forward would require but little force, as any one may prove by ramming a bullet through a barrel. It is obvious, therefore, that no portion of the enormous force required to expand the barrel could have been exerted against the bullet, or it would have given way instantly. The only conceivable mode in which this lateral pressure could be produced, is by the wedging together of the component particles of air. The process of the operation was therefore in the following order, although the whole performance was (to our apprehension) instantaneous. The column of air between the two bullets being compressed by the advance of the rear one, and wedged together by its lateral pressure, caused the barrel to expand at the base of the bullet which was fast in the gun. The moment this expansion commenced a space was opened round the bullet, which was instantly filled with the air, and the bullet being of soft metal, was compressed and elongated, thus relieving the barrel from the necessity of further expansion. At the same moment, this elongated bullet was struck by the one in the rear, the point of which was expanded by the blow so as to fill the threads of the rifle, and the two passed out together, firmly united, but with their momentum so far diminished that they made but a slight penetration of the target."

It seems plain that the principle of Hardy's non-recoil gun is at least worth investigating, and it shows, also, that our idea of the compression of explosive gases is the best means of accounting for such a singular phenomenon as this we illustrate.

We wait for further information. Evidently there is much in this matter that ought to engage the attention of our scientists and mechanics. If Hardy's plan for firing projectiles, from tubes open at both ends, has any value as a useful means of simplifying gunnery, it should be known, and it seems that such experiments as we have illustrated will do much toward giving that information.

NATIONAL ACADEMY OF SCIENCES.

This body has just held a session of five days at Northampton, Mass. A large number of the most distinguished scientists of the country were in attendance, and the proceedings were of a most satisfactory character to those attending, particularly to the learned men themselves.

It is unfortunate, in our opinion, for the country at large, that these gatherings do not assume a character of a more useful and popular nature. By many they are regarded as convenient occasions to ventilate speculations and theories looking to no useful result as their ultimate. Science should lead and direct art, but papers on abstractions, which, by no effort of the mind and no endeavor of the will, can be made to yield a particle of useful information, are altogether out of place in a meeting of scientific men. Whether language belongs to the field of physical science or to the domain of moral philosophy, does not appear to be a question that can in the remotest degree affect the improvement of the race. Such problems may do very well as amusements for hypercritical minds or transcendental tastes, but for all their benefit to the world at large we might as well have a treatise on the cause of lunacy in bedbugs.

It is pleasant to know that all the investigations and the amusements of this scientific society are not of this style. It may be well enough to allow some mere abstract speculator to ventilate his learned nonsense before a company of sympathizing *savans* and befogged listeners; but the true value of the Academy must be found in their useful labors.

Speaking of the labors of the Academy, the reporter for the *Tribune* says that "Professor Bache, the President, was in such intimate relations with the Government, and Mr. Lincoln set so high a value upon his services, that a Cabinet meeting was held in his office every week during the war. It was Professor Bache who made the Academy especially valuable to the Government. By his vast labors during the war, Professor Bache was entirely broken down, and for the last year has been utterly unable to work. It is to be most ardently hoped that he may soon recover and resume his great usefulness to the country and to science. Of the immediate usefulness of the Academy to the country, there is sufficient evidence in the fact that the annual report shows that the Government has referred to the Academy for reports on the following subjects:—

"In the first year, from the Navy Department, weights, measures, and coins, their decimalization, etc.; methods of protecting the national currency from being counterfeited; Saxton's alcometer, intended as a substitute for the hydrometer now in use. The protection of the bottoms of iron vessels from corrosion by sea-water and from fouling. The correction of the compasses of naval vessels, especially of iron vessels and iron-clads. The inquiries as to the expediency of continuing in their present form the publication, by the Navy Department, of the wind and current charts, and of the sailing directions. In the second year, from the Surgeon General—as to the best method of testing the purity of whisky employed for medicinal purposes. From the Navy Department—to conduct, witness, and report, upon experiments on the expansion of steam. From the Treasury Department—the examination of aluminum, bronze, and other alloys, for the manufacture of cent coins.

"On most of these subjects the Academy has already, by a committee, presented elaborate reports, which have been accepted as decisive and exhaustive so far as they claim to go. It will be seen that these subjects embrace matters of the utmost importance to the country. Thus the Academy has indorsed the French decimal system of weights and measures as against the anomalous and puzzling lack of system now in use in this country, and recommended its adoption. Should their suggestions be followed, their influence would reach almost every person in the country almost every day, and after the change was once made, affect him most desirably."

Bleeding from the Nose.

Some two years ago, while going down Broadway, in New York, blood commenced running from my nose quite freely. I stepped aside and applied my handkerchief, intending to repair to the nearest hotel, when a gentleman accosted me, saying, "Just put a piece of paper in your mouth, chew it rapidly, and it will stop your nose bleeding." Thanking him rather doubtfully, I did as he suggested, and the flow of blood ceased almost immediately. I have seen the remedy tried since quite frequently, and always with success. Doubtless any substance would answer the same purpose as paper, the stoppage of the flow of blood being caused doubtless by the rapid motion of the jaws, and the counter action of the muscles and arteries connecting the jaws and nose.

Physicians state that placing a small roll of paper or muslin above the front teeth, under the upper lip, and pressing hard on the same, will arrest bleeding from the nose—checking the passage of blood through the arteries leading to the nose. H. C. K.

THE London Pneumatic Dispatch, by which small parcels are transported from one part of the city to another, by means of the exhaustion of air from a tube, is familiar to our readers. It appears, from a report recently made by the directors of this company, that 120 tuns of goods can be transmitted through the tube every hour, at a speed of eighteen miles an hour, and that the cost is less than one penny (two cents) per tun for each mile. They anticipate large dividends from the line when completed to points outside the city.

Photographing Cannon Balls.

[From the British Journal of Photography.]

Some months ago when on a visit to Woolwich Arsenal, we were shown by Mr. M'Kinlay, Proof Master, some photographs taken of guns while being fired, which not unnaturally excited feelings of surprise. So rapid had been the exposure, and so well had the proper moment for the exposure been seized, that the projectile could be seen protruding from the cannon's mouth while in the act of proceeding on its distant mission. Mr. M'Kinlay kindly afforded us every requisite information relative to his invention for securing such wonderful results; and, from the fact that the comparative efficiency of certain kinds of small-arms and the influence they are now exercising in European affairs are at present receiving a large share of public attention, we think that it may not prove uninteresting to bring before our readers some matters of scientific interest in connection with our own "great guns," and the means employed for ascertaining by photography, and with the utmost possible precision, not only the path of a projectile in the air, but the time occupied in its progress between two or more points anywhere in the course of its flight. It will be obvious that when it is desired to obtain a photograph of a gun at the moment of discharge, the gun itself must be made subservient to the exposing and covering of the sensitive plate. It is impossible that any person, however delicate his eyes and ears may be, can operate so dexterously as to stop the exposure when the ball has been projected, say a few inches from the muzzle of the gun, and when it is consequently traveling at its greatet velocity. This can only be accomplished by automatic arrangements, aided by electricity.

Let us now suppose that a stereoscopic camera, fitted with powerful lenses of short focus, has a thin, light disk fitted up in front of the lenses, revolving on an axis between the two lenses. Two holes in this disk correspond with the apertures of the lenses, so that if a circular spring—like that of a pair of snuffers—cause the disk to make half a revolution with great rapidity, the holes or apertures will, when flashing past the apertures of the lenses, admit the light for an exceedingly brief period of time. This is the means employed in the Arsenal for effecting the exposure of the plate.

We shall now enter into the details of the manner of discharging and arresting the circular exposing diaphragm. The opening and shutting of the camera at the precise instant of time is, as we have said, by far too nice an operation to be accomplished by hand. It must be borne in mind that a gun commences to recoil as soon as the projectile is fairly clear of its muzzle. The picture which we examamined had been taken when the projectile was yet emerging from the gun's mouth, and before it had got quite clear of it, and consequently before the recoil of the gun had commenced. The exposure was very rapid, but not so much so as to show the front edge of the emerging projectile with a sharp outline. Although the gun, from the recoil not having commenced, was quite sharp, the front edge of the projectile, was, so to speak, vignetted.

The gun is fired by means of the galvanic tube invented by Mr. M'Kinlay, and such as is used in proving ordnance. Inside of this there is a small platinum wire, which, when a current of electricity is passed through it, instantly becomes red hot and melts. Let us now see how this affects the operation of photographing the gun. When the gun is ready for firing, the disk in front of the lenses is wound up so that the rotating force of the spring in the centet is at its maximum. It is retained in this position by means of a catch and trigger, the latter of which is operated on by means of an electro-magnet. The following, then, is what takes place: When the galvanic current is sent through the wire, the fine platinum wire imbedded among the gun powder of the discharging tube or fuse immediately becomes red-hot and melts. But while in progress of melting, it accomplishes two things—it transmits a current through it by which the electro-magnet becomes vivified and pulls the discharging trigger of the disk in front of the camera lenses; and secondly, it ignites the gunpowder and discharges the gun. But were this all, the exposure would be made before the powder had had time to ignite and consequently discharge the gun; hence it is important that the lenses be kept open until the gun really discarges its contents. The means for effecting this are as simple as they are ingenious and complete. When the trigger acts so as to release the disk from its enforced pent-up condition, it is propelled forward by the central spring until the apertures in the disk and those of the lenses coincide, where, by means of a stop, the disk is retained until the powder is ignited and the gun discharged, when, the platina wire being ruptured, the passage of the electricity is stopped, the electro-magnet simultaneously loosing the power by which it was enabled to arrest the rotatory progress of the disk, which thus darts forward and closes up the camera as the contents of the gun are in the act of being ejected from it.

Correspondence

Developing Heat.

MESSRS. EDITORS:—I see in your foreign correspondence, on page 98, current volume of the SCIENTIFIC AMERICAN that Mr. B. Stewart, at Kew, is conducting some new experiments for developing heat by rotating a disk in vacuo, and that this heat arises from causes unknown. Allow me to observe that this experiment is only a modification of the experiments of Arago, who rotates a disk under a compass needle, and so produces currents in the disk, which react on the needle, and Foucault, who turns a disk between the poles of an electro-magnet, and thus develops currents which strongly heat the disk.

In every rapidly-turned metallic disk, electric currents are induced by the influence of the earth's magnetism, and these currents will necessarily heat the disk. When the magnetic influence is weak, as is the case with the earth, the currents are weak, and the heat developed will be so slight, that it takes a thermo-electric pile to observe the rise of temperature. As the friction and disturbance of the surrounding air may produce much more heat, the disk is placed in vacuo in order to eliminate this influence, but when trying to neutralize the earth's magnetism by an opposing steel magnet, placed at a certain distance, we may neutralize the earth's action on the compass needle placed at a certain point, but the opposing neutralizing currents will be still there, and show their action in any moving metallic mass, by inducing electric currents, of which the existence is proved by the consequent rise of temperature. P. H. VANDER WEYDE, M. D.

Philadelphia, Aug. 10, 1866.

Fleas and Mosquitoes.

MESSRS. EDITORS:—In an article on page 82, current volume of the SCIENTIFIC AMERICAN, you state that oil or essence of pennyroyal is believed to be a specific against the attack of fleas. I have always used it when fleas were in my bed or about my clothing, and found that it would banish them entirely, and am now using it with equal success to banish musquitoes; they will not come near where it is. W. N. TAYLOR.

Steam Fire Engines.

MESSRS. EDITORS:—If any of your readers can give the greatest performance of an American steam fire engine, replies upon the following points are solicited:—Diameter of steam cylinder; stroke of do.; pressure of steam; diameter of water cylinder; pressure; number of strokes per minute; length of hose through which one stream was projected; diameter of nozzle and distance of projection. Length of hose of 100 feet is preferred. C. H. H.

New York, Aug. 10, 1866.

Preserving Green Peas.

MESSRS. EDITORS:—In answer to the inquiry concerning green peas, on page 69, current volume, I give the following:—

I have found that, by gathering peas when young, and in the best condition for immediate use, then podding and scalding, and drying thoroughly in the sun or oven, they will keep almost any length of time done up in paper bags. When wanted for use, soak them in mint tea until they swell again to their natural size. J. H. D.

AGRICULTURAL EXHIBITIONS.

Notwithstanding our best endeavors, we have not succeeded in procuring so complete a list of prominent fairs as we desired. We give a selection from the list we have.

The New England Agricultural Society and the Vermont State Society will hold a joint exhibition at Brattleboro, Vt., on the 4th, 5th, 6th and 7th days of September. The Agricultural and Mechanical Association of St. Louis will open an exhibition in that city Oct. 1st, to continue six days. The premiums amount, in the aggregate, to over $20,000.

STATE FAIRS.—American Pomological, St. Louis, Sept. 4; Canada West, Toronto, Sept. 24, 28; Illinois, Chicago, Sept. 24, 29; Indiana, Indianapolis, Oct. 1, 5; Iowa, Burlington, Sept. 18, 21; Kansas, Lawrence, Oct. 2, 5; Kentucky, Paris, Oct. 3, 5; Michigan, Adrian, Sept. 18, 21; Minnesota, Rochester, Oct. 3, 5; New Hampshire, Nashua, Sept. 18, 20; New York, Saratoga, Sept. 11, 14; Ohio, Dayton, Sept. 25, 28; Pennsylvania, Easton, Sept. 25, 27; Wisconsin, Janesville, Sept. 25, 28.

NEW YORK.—State and County:—Albany, Albany, Sept. 25, 28; Genesee, Batavia, Sept. 19, 20; "International," Rouse's Point, Sept. 18, 19.

MASSACHUSETTS.—State and County:—Bristol, Taunton, Oct. 2; Berkshire, Pittsfield, Oct. 2; Essex, Haverhill, Sept. 25; Hampshire, Franklin and Hampden, Northampton, Oct. 4; Hampden, Springfield, Oct. 2; Middlesex, Concord, Sept. 20; Norfolk, Dedham, Sept. 27 Plymouth, Bridgewater, Sept. 27.

NEW JERSEY.—State and County:—Monmouth, Freehold, Sept. 19, 20; Morris, Morristown, Sept. 11, 14.

PENNSYLVANIA.—State and County:—Bucks, Newtown, Sept. 25, 26; Chester, Westchester, Sept. 27, 29.

KENTUCKY.—State and County:—Warren, Bowling Green, Sept. 18, 20.

MICHIGAN.—State and County:—Jackson, Jackson, Sept. 26, 28.

ILLINOIS.—State and County:—Cass, Virginia, Sept. 4, 6; Peoria, Peoria, Sept. 19, 21.

WISCONSIN.—State and County:—Brown, Green Bay, Sept. 26, 27; Horse Show, Milwaukee, Sept. 11, 13.

IOWA.—State and County:—Cerro Gordo, Mason, Sept. 20, 21.

THE MARKETS.

Although there are many complaints of the general dullness in business, and there are no very encouraging signs of an early fall trade, yet prices are well sustained, and money is plenty and obtainable at low rates. The new tariff law, which went into operation Aug. 10th, has tended to enhance the prices of such imported articles as were subjected to a higher rate of duties. Reports of a damaged crop of cereals have not had the effect to stimulate speculation to any great extent, notwithstanding the facility of obtaining money. This is probably owing to the manifest unreliability of these reports; as it is morally certain the crop will be an unusually large one: at least, whatever occasional failure there may be in the wheat crop, induced by local causes, will be more than counterbalanced by the excess in the corn yield. The unsettled state of European affairs still threatens the peace of that continent, and although the European crop reports are generally favorable, we believe the demand for American grain will be large.

GOLD—Has held firmly at about 149. Exchange is dull and the rates in favor of the buyer. Money is obtained on call at 4@5 ₰ cent. Discount at about 6 ₰ cent.

ASHES—Pots are quite dull, but with continued light receipts, market steady; the sales are 80 bbls. at $8 87½@8 90. Pearls are nominal; we hear of no business.

BRICKS—Common Hard have advanced to $12. Croton and Philadelphia are unchanged at $14@$15 for the former, and $40 for the latter.

COFFEE—Rio held firm. No disposition to sell. St. Domingo, 11¼c., in bond, and Costa Rica at 17¼; both gold.

COPPER—Detroit, $1@31½; Portage Lake, $1.

COTTON—Market depressed. Prices have declined from 2@4c. Ordinary, 25@28; middling, 33@37c.

FLOUR—Slight advance. Common brands, $8 55@$9 85; Genesee extra, $10 25@$12 50; Canada not in demand.

MEAL—Dull.

GRAIN—Wheat advanced slightly. Milwaukee, $2 20@$2 22½ Amber, $2 75; North Carolina Red, $2 36. No exports. Rye, Western, 92c.; Coarn, 80@81c; Western Mixed, $1; Oats declined to 39@44 Chicago; 45@47 Milwaukee; 57 Delaware.

IRON—Market inactive. No. 1 American pig $47@$48. Scotch, $47@$50. Bar and scrap very quiet.

LATHS—Are firm, with sales of Eastern, at $4, three months.

LEAD—Pig is in better demand, and, though prices are without quotable change, the market is rather in sellers' favor. The transactions are 300 tons Spanish at $6 75; 50 do., English (Cookson's), $7, all gold. Bar, Sheet, and Pipe may be quoted steady at 10½c., cash.

LEATHER—The market for Hemlock Sole continues dull, and prices are very firm. We quote Rio Grande and Buenos Ayres Light Weights, 33@34 cents; Middle do., 35@36; Heavy do., 36@37; California Light, 31@32; Middle do., 32½@34½; Heavy do., 34@35; Orinoco, &c., Light, 31@32; Middle do., 33@34; Heavy do., 29@32; Slaughter Upper in Rough, 31@33. Oak Sole is in light stock, and the market is firm. French and American Calf Skins are firm with a fair demand.

LIME—Rockland is in good demand. Common at $1 50; Lump is nominal at $2 00, cash. Rosendal Cement, $1 75, cash.

LUMBER—There is an active demand for Eastern Spruce, with sales at $25, usual terms.

MOLASSES—There has again been a more active demand for the low and medium grades Cuba, a considerable portion of which, we learn, is to pass into the hands of distillers. The operations, including two or three cargoes to arrive coastwise, are 1,704 hhds. and 34 tcs. Clayed Cuba, at 42@44c.; 480 hhds. 10 tcs., and 131 bbls. low grade Cuba Muscovado, 45c.; 464 hhds. do., 55@55½; 197 hhds. and 28 tcs. English Island, 50; 65 hhds. Porto Rico, 60@70, 4 mos., the lower price for tarr; and 450 hhds. and 75 tcs. Centrifugal Cuba, on terms not mentioned.

NAILS—Cut are very firm and scarce, with a tendency to advance; some sizes are scarce, and for these ¼ cent more is paid. We quote: Cut, 6¾@7 cents; Clinch, 8¾; Forged Horse, 22 Pressed do., 22@23; Copper, 50; Yellow Metal, 23; Zinc, 20; and Wrought Ship and Boat Spikes, 7@8 cents, as to sizes, net cash.

SUGAR—Prices have favored sellers, and we have to notice an advance of ¼ of a cent ₰ ℔ on Refining grades, bringing Fair Refining Cuba to 10¾@10¾ cents; Good, do., to 11@11¼; and No. 12 Box to 11¾@11¾, 4 mos. Grocery grades are without particular change, but are the turn dearer. Refined continues in good demand, but is less active than before. Messrs. Stuart quote their best Crushed, Granulated, and Ground, 16¾ cents; White A, 15¾; and Yellow C, 15¾—the range of other manufacture is 16¾@17 cents for Hard; 15¾@16¾ for Soft White (B and A only), and 14@ 15¾ for Yellow.

WIRE—Telegraph, 9c.@10c, for Nos. 7 and 11, and for hoop skirt, 55c. for No. 13 covered, and 85c. for uncovered.

WOOL—Market unsettled. Western Fleeces at 48@50c. for low grades, 55 for ordinary, and 65@70 for choice—the latter price for Ohio pickloek; super and extra pulled, 55@65; short staple at 35; Texas, 15@18 for inferior, 20@24 for ordinary, and 25@30 for superior.

ZINC—9¼c. less 4 per cent. for gold; 13¾c., currency, for Lehigh.

NEW INVENTIONS.

The following are some of the most prominent of the patents issued this week, with the names of the patentees:—

LOOM.—W. B. WALKER, AND N. D. HARTLEY, Salem, Iowa.—This invention is to simplify and improve that kind of hand loom in which several leaves of harness are employed.

POUNCING HAT BODIES.—S. S. WHEELER AND D. B. MANLEY, Danbury, Ct.—This invention consists in pouncing a hat body by means of an emery cylinder or wheel revolving at a high speed against the surface of a hat body revolving at a comparatively low speed.

COAL-OIL AND OTHER LAMPS.—C. H. BAGLEY, Elgin, Ill.—This invention consists, among other things, in trimming the wicks of coal-oil and other lamps by means of a scraper so hung within the top of the lamp as to be moved across the upper end of the wick tube, and its wick, thus scraping off or removing the charred or burnt portions of the wick.

RENDERING TALLOW, ETC.—J. J. ECKEL AND I. S. SCHUYLER, New York City.—This invention is a device for rendering tallow which will preclude the possibility of the tallow being scorched or burnt during the process, and by which all offensive odors will be avoided.

STREET LANTERN.—B. A. JOHNSON, Jeffersonville, Ind.—This invention consists in forming the bottom or base portion of a street lantern, of cast metal, and the body of sheet metal, whereby sufficient strength is secured in connection with durability and convenience of handling, and diminished expense.

SPREADING MASTIC ROOFING.—W. R. COE, West Meriden, Ct.—This invention is an improved apparatus for spreading roofing cement, evenly, quickly, and conveniently, and consists in the combination of the guiding and pressure roller, the box or hopper, and the adjustable spreading board.

CIGAR HOLDER AND HAT HOOK.—CHAS. GSCHWIND AND JOHN GRETHER, Union Hill, N. J.—This invention relates to a simple device which can be conveniently carried in the pocket and used as a cigar holder, and also a hat hook whereby the hat can be suspended in any convenient spot.

TOBACCO BOX.—THOS. HUCKAUS, New Baltimore.—This invention consists of a box for carrying tobacco having a partition through it with an A-shaped base, which latter forms a receptacle for matches, which are to be withdrawn from an opening in the front of the box, a slide attached to the cover confining them in the case when the lid is closed.

DITCHING MACHINE.—PETER LUGENBELL, Greensburgh, Ind.—This ditching machine consists in a novel construction of the excavator and the arrangement of the same in the framing, whereby a very simple and efficient device for the purpose specified is obtained.

SORGHUM EVAPORATOR.—P. C. VAN SLYKE, Bloomfield, Ind.—The object of this invention is to improve the construction of evaporators for sorghum sirups so as to promote crystallization and the production of sugar.

SOLDERING EAVESTROUGHS.—E. W. WILKINSON, JR., Mansfield, Ohio.—This invention relates to a holder for eavestroughs, while being soldered, whereby the work can be accomplished with much facility and more evenly than by the method heretofore practiced.

KITCHEN TABLE.—E. L. STAPLES, Nashville, Tenn.—This invention relates to a table which serves all the purposes of the common one, being convertible into a kneading trough and table combined, and it appears to be very simple and compact in its combination and to fully answer its purposes.

HINGE.—ALVAH WISWALL, New York City.—This invention consists in applying a spring to one or both of the hinges of a door or gate, in such a manner that the spring will close the door or gate after being opened for a person to pass through, and when the door or gate is opened further than is necessary to keep it open.

HAY-ELEVATING DEVICE.—E. SHORKLEY, Lewisburgh, Pa.—This invention relates to a new and improved device for elevating hay in barns and depositing it in bays by the aid of a horse.

SLIDE BOLT.—JOHN DECKER, Sparta, N. J.—This invention consists in applying a series of tumblers to a slide bolt in such a manner that an ordinary bolt may be rendered as secure a fastening as an ordinary tumbler lock, and without materially augmenting the cost of the manufacture of the slide bolt.

INCRUSTATIONS IN STEAM-BOILERS.—N. SPENCER THOMAS, Painted Post, N. Y.—This invention relates to a compound which when introduced into a steam boiler, will prevent the formation of incrustations or scales, and which can also be used with advantage for the purpose of removing scale already formed in steam boilers.

VULCANIZING INDIA-RUBBER, ETC.—L. HOFFSTADT, Philadelphia, Pa.—This invention consists in the arrangement of a self-acting regulator in combination with a vulcanizing apparatus in such a manner that the flame which heats the boiler of the vulcanizing apparatus is extinguished when the temperature rises beyond a certain degree.

CARPENTER'S CLAMP.—HERMANN SCHMIDT, New York City.—This invention consists in a carpenter's clamp which is provided with movable nuts in such a manner that by releasing the nuts from the screws, the two jaws of the clamp can be moved freely in either direction and readily adjusted at the desired distance apart.

RENDERING LARD.—JOHN J. ECKEL AND ISAAC S. SCHUYLER, New York City.—The object of this invention is to avoid the dissemination of vapors and unpleasant odors from kettles in which tallow is being rendered, and to utilize said vapors by rendering them available as a fuel.

THROTTLE VALVE.—R. B. ANGUS, Tremont, Pa.—This invention relates to a flask made for the purpose of casting throttle valves; it is composed of a cylinder bored out to the diameter of the seat into which the valve has to fit, and is provided with suitable blocks, the inner ends of which, when properly put together, form the mold for the valve to be cast. The blocks are held in position by a screw clasp so that they can be screwed up as the metal shrinks, and a suitable hole passing transversely through the cylinder allows of introducing the pin or rod which forms the core for the axle of the valve in such a manner that the hole for the axle is cast in and a valve is obtained which is ready to be put in its seat immediately upon being removed from the mold.

PRESSURE FOOT, ETC.—JAMES J. RUSS, Worcester, Mass.—This invention consists in so arranging a pressure foot for planing and molding machines that it can be adjusted in position to accommodate itself to the cutters of the machine, whether large or small, and also adjusted to conform to the bevel or inclination of the surface of the stuff or wooden strip which is being passed through the machine.

PLOW-CLEANING ATTACHMENT.—TIMOTHY TERREL, Spring Hill, Ohio.—This invention relates to a new, simple, and useful attachment for plows, whereby the same are effectually prevented from becoming choked or clogged up with weeds, etc., during the operation of plowing.

FISHWAY.—ALONZO LIVERMORE, Ashland, Pa.—This invention consists in constructing a fishway of any desired diameter, divided off into compartments to form pools or water chambers, an opening being made through each division wall for the current to pass through, and around these openings there are secured water breaks in the form of tubes pointing obliquely and against the current; by which construction and arrangement the velocity of the current is broken.

SNAP HOOK.—B. B. LEWIS, New York City.—This invention is a snap hook for hitching straps which will admit of being disengaged from a post or ring by simply pulling the reins or lines by which a horse is driven, and thereby obviating the necessity of detaching the hook from the ring previous to getting into a vehicle or mounting a horse.

CONCENTRATED LIQUID EXTRACT.—N. SPENCER THOMAS, Painted Post, N. Y.—This invention consists in the application of jets of air or steam injected at or through the bottom of a vacuum pan in which the concentration of a liquid extract is to be effected, so that by these jets of air or steam the moisture contained in the extract is completely expelled, and a solid extract can be made before removing it from the pan.

PICKER FOR FIBROUS MATERIAL.—LEVI FERGUSON, Lowell, Mass.—This invention consists in giving to the comb plates a vibrating motion toward and from the cylinder by means of suitable cams, eccentrics, or other means, in such a manner that the teeth of the comb plates alternately take the fibers from the cylinder as they move toward the same, and cleaning themselves as they move from the cylinder. The operation of picking is greatly facilitated.

DISINFECTING COMPOUND.—HENRY NAPIER, Ellzabeth, N. J.—This invention relates to a disinfecting compound, the chief ingredient of which is phenic acid, and which can be used with good effect in public places, or in hospitals, sick rooms, and wherever a disinfectant is required.

FOUNTAIN PEN.—H. MADEHEIM, Brooklyn, N. Y.—This invention consists in a fountain pen with a hollow piston rod, stationary piston and movable pump barrel, in such a manner that the barrel or reservoir can be filled from either end, and a comparatively large supply can be taken in by the pen.

SKELETON SHAPE OR FRAME.—MISS P. A. LA MENT, New York City.—This invention consists of a skeleton frame or "shape," which, being applied to the waist of a person, can be so adjusted as to perfectly conform thereto, and when removed the form will be retained, over which a dress can be fitted.

SHEET METAL PANS.—M. S. SAGER, Washington, Ohio.—This invention relates to a useful machine for the manufacture of sheet iron and other sheet metal pans, whereby such portions of the sheet metal as are to constitute the sides of the pan can be bent upward, and their several corners firmly united.

BED BOTTOM.—E. M. PAYNE, Waverly, New York.—This invention consists in the combination of sacking, rollers, pawls, and ratchet wheels with each other, and with the frame of the bed bottom, for the purpose of straining or tightening the sacking; and in the combination of half elliptic springs or equivalent with the frames of the bed bottom.

DRYING HOUSE.—H. B. GALLOP and CHARLES WOOD, Watertown, Wis.—The object of this invention is to obtain a house for drying lumber and other substances, which will be fire-proof, and possess other advantages over drying houses now in use.

MACHINE FOR TURNING HUBS.—HIRAM INMAN, Hagaman's Mills, N. Y.—This invention relates to a new and improved machine for turning hubs, whereby the work may be rapidly and perfectly performed, effecting a great saving both in time and labor.

CUTTING APPARATUS FOR GRAIN AND GRASS HARVESTER.—M. P. HATHAWAY, Mankato, Minn.—This invention consists in having the cutters of a harvester attached to an endless apron placed at the front end of the platform, or a suitable bar arranged in such a manner that they will work or pass each other with a drawing cut, and operate similar to a pair of shears.

SECURING TEETH IN CIRCULAR SAWS.—WILLIAM CLEMSON, Middletown, N. Y.—This invention relates to a new mode of securing teeth in circular saws, whereby the following results are obtained:—First, The ready removal of the teeth from the saw plate, as well as the ready attaching of them thereto. Second, The preventing of the swelling or warping of the plate by the lateral pressure of the clamp which secures the teeth in the plate.

FOLDING UMBRELLA.—DANIEL KELLEY, Slatersville, R. I.—This invention relates to an umbrella the ribs of which are made in two parts to slide one on the other, and are provided with a spring catch in such a manner that when the ribs are extended to their full length they are rigid, and the umbrella when folded is reduced to a small compass.

CAR COUPLING.—G. D. SPOONER and J. F. F. HALL, Rutland, Vt.—This invention consists in the arrangement of a central horizontal partition in the drawheads of a car coupling in such a manner that the link or shackle bar can be readily adjusted for cars of a different height, and a universal self-locking car coupling is obtained.

BUTTON.—E. A. ROBINSON, Waterbury, Conn.—This invention consists in the use of a metallic plate, made of a corresponding diameter to that of the mold, the center of which is broken out, forming a "ragged" edge, flange, or lip. This plate by its flange is driven into the center opening of the mold in which the eye or loop is first placed, tightly and firmly securing it.

SEWING MACHINE.—AUSTIN LEYDEN, Atlanta, Georgia.—This invention is a sewing machine which will make, at the pleasure of the operator, several varieties of stitches without requiring to be stopped for alteration or adjustment.

SEWING MACHINE.—ANTON GALLETH, New York City.—This invention is an improvement in rotating feeding devices for sewing machines, consisting in improved means for converting a reciprocating into an intermittent rotary motion.

SHOE CLEANER.—B. FRANK EARLY, Palmyra, Pa.—This invention consists of a frame constructed and arranged in such a manner that corn husks and other suitable substances may be made to form a durable and efficient mat or foot cleaner, to be renewed at pleasure.

CLOTHES BAR OR HOLDER.—THEODORE F. SNOVER, Menasha Wis.—This invention consists of a series of bars or rods so hung within a common head or frame, that when not desired for use they can be swung up out of the way.

WASHING MACHINE.—B. BISBEE, East Pharsalia, N. Y.—This invention relates to improvements in that class of washing machines in which a revolving cylinder is used, into whose interior the fabrics, etc., to be washed are placed, and whirled round to cleanse them.

VALVE IN THE HULL OF A VESSEL.—JOHN H. FAIRBANK and FREDERICK RHODES, McKeesport, Pa.—This invention consists in the application of a valve to the hull of a vessel, whereby the vessel can be filled with water and sunk in case of fire.

BEER MEASURE.—JAMES DAILEY, Albany, N. Y.—This invention is a device for measuring fermented liquors while the same are in either a foaming or quiet state.

ROSE ENGINE LATHE.—THOMAS LIPPIATT, New York City.—In this lathe the dictator, in lieu of being stationary, is arranged so as to move laterally as the mandrel is revolved, according to the figure of the pattern secured on the mandrel, the cutting tool being connected with the dictator in such a manner as to partake of its movements, thus transferring to the article turned a similar configuration to that of the pattern.

VEHICLE.—FRANCIS CRICK, Beanesville, Ohio.—This invention consists in the peculiar construction of the springs and gearing of wagons and other vehicles.

LARD LAMP.—TIMOTHY TERREL, Spring Hill, Ohio.—This invention consists in a novel manner of securing or arranging the wick within the fountain, whereby the wick may be raised or lowered with the greatest facility.

HOLDER FOR NECK-TIES.—W. H. HART, Jr., Philadelphia, Pa.—This invention relates to a holder for scarfs, neck-ties, etc., by means of which they can be readily secured in position upon the neck, or removed therefrom without injuring or soiling the collar, and without requiring the scarf or neck-tie to be passed entirely around the neck.

QUESTION ABOUT PRIOR INVENTION.

BEFORE THE EXAMINERS-IN-CHIEF ON APPEAL.

Interference between the respective applications of W. H. Salisbury and Charles Jones.

The above case came on, some time since, for hearing before the Examiners-in-Chief of the Patent Office. Jones proved clearly that he had a rude model of the invention in dispute in October, 1863. But he took no further steps toward completing it till the fall of 1864, when he applied for a patent. It is equally clear that, in June, 1864, Salisbury put a single specimen in actual use, and in the course of the next month, as many as twenty. The date of his invention goes no further back than June.

The Board found, from the testimony, that Salisbury obtained the invention from Jones, and that Jones had not abandoned it as an unsuccessful experiment, although the evidence upon these points was not decisive. The discussion respecting it would not prove interesting; but a legal question was raised, upon the state of facts that is of general importance.

On the part of Salisbury, it was contended that Jones had forfeited his right to a patent in consequence of his not having used due diligence in perfecting and adapting his invention, while Salisbury had actually reduced it to practice. In support of this position, his counsel urged that even he who obtains a patent surreptitiously, or unjustly, while the true inventor is thus negligent, is entitled to hold it against the latter, under the 15th Section of the Act of 1836. It has been held in several cases. They further added, that he who first reduces an invention to practice is entitled to a patent against him who had conceived it previously, but had been guilty of laches in maturing it. From this they argued that Salisbury was, under the circumstances, entitled to a decision.

The Board came to a different conclusion. They did not acquiesce in the position first advanced, for, though it might be implied from what has been sometimes said, that he who obtains a patent surreptitiously may hold it against a prior but negligent inventor; yet, if so, this must be regarded as a sort of penalty inflicted upon the latter for his lack of diligence. Like all other penalties, however, it can be imposed only under the precise circumstances under which the statute has prescribed it; and that is, when a patent has been actually obtained. Where neither party holds one, no such punishment can be inflicted.

If, indeed, the parties were both independent inventors, who had acted in good faith, he who first matures the invention thereby acquires the right to it, except in the single instance where his competitor first conceived it, and has been diligently engaged in adapting and perfecting it. But this doctrine merely determines the civil rights of two innocent and bona fide competitors. It has never been applied where one of them is found to have obtained the invention from the other. To hold this would be inflicting the penalty in a case where the law has provided none; that is, where the party who first matured the invention had not obtained a patent.

The decision declaring Jones the prior inventor was accordingly pronounced by S. H. Hodges for the Board.

The decision has lately been affirmed by Cartter, Chief Justice of the Supreme Court for the District of Columbia.

SPECIAL NOTICES.

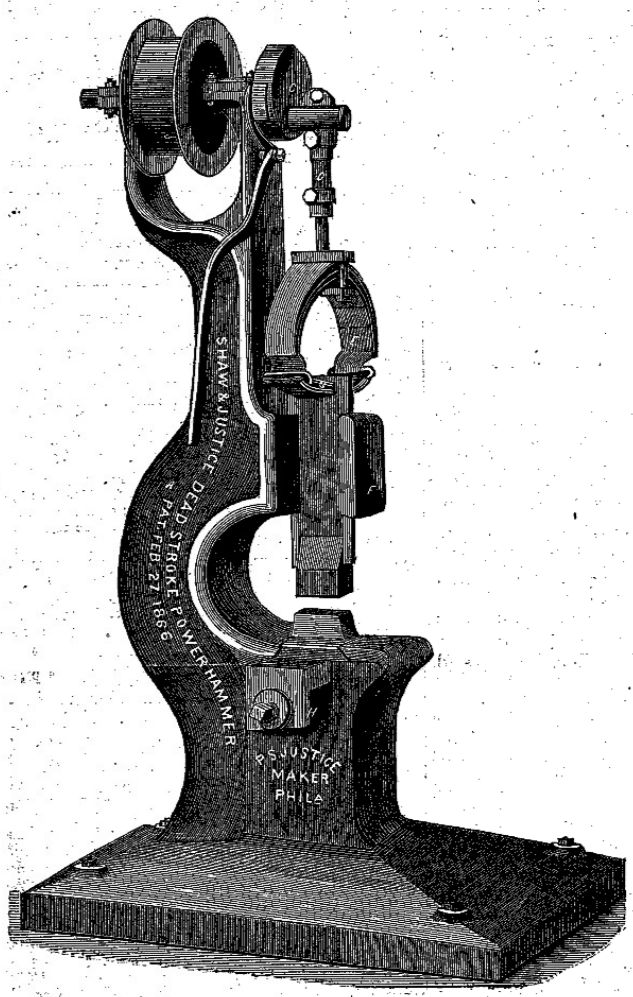
Joseph J. Couch, formerly of Philadelphia, Pa., now of Brooklyn, N. Y., having petitioned for the extension of a patent granted to him the 23d day of November, 1852, for an improvement in machines for drilling stone, it is ordered that said petition be heard on Monday, the 5th day of November next.

Stephen C. Mendenhall, Richmond, Ind., having petitioned for the extension of a patent granted to him on the 9th day of November, 1852, for an improvement in mode of throwing shuttles in looms, it is ordered that the said petition be heard on Monday, the 22d day of October next.

Stephen C. Mendenhall, of Richmond, Ind ,and Obed King and Ezra King, of Salem, Iowa, having petitioned for the extension of a patent granted to them on the 9th day of November, 1852, for an improvement in hand looms, it is ordered that the said petition be heard on Monday, the 22d day of October next.

DEAD-STROKE POWER HAMMER.

There is no question but that the employment of power hammers would be far more universal at the present time if some simple and efficient machine existed for the purpose. The ancient trip hammer is not by any means uncommon in the best workshops, and where steam is available, we find many hammers worked directly by it. Atmospheric machines are also in use, but each and all of these have peculiar difficulties inherent in them which cannot be surmounted. The trip hammer, as is well known, entails constant supervision and outlay to keep in order, for the entire weight or force of the blow, uncompensated by any arrangement whatever, comes upon the handle of the hammer, and through it is transmitted to the center on which it vibrates, to the bed plates, and even to the line of shafting which drives it. As a consequence the handle has to be renewed very often, and the saddle piece, as well as other parts, are constantly broken by the shocks they undergo. Steam hammers also require great oversight, for having many parts, valves, pistons, levers, etc., inspection is requisite to keep the tool in good order. Pneumatic or atmospheric hammers, that depend upon the compression of air for their motive power, are open to similar objections, for air is a much more subtle fluid than steam. Space is also a consideration in many cases, and the trip hammer is particularly objectionable on this account.



SHAW'S DEAD-STROKE POWER HAMMER.

The hammer here illustrated is an entire novelty in its line, as well as in mechanical effect for the power expended. The proprietors and manufacturers are large workers of steel in the form of car springs, and finding the common difficulties with trip hammers, were led to investigate with a view to improvement—the result is the hammer illustrated.

It is well known to mechanics, especially steel workers, that forging thin plates of it is the hardest duty a hammer can do. The heat is soon lost, and much of the work is unavoidably done at a black heat. Trip hammers running on this work soon jar themselves to pieces, as do all others, unless care is taken. Owing to the peculiar construction of this hammer, however, the very causes which destroy others are taken advantage of here to give greater efficiency—the recoil is stored up and made to operate to some purpose.

The parts are few and simple; an upright frame, A, is fitted with a transverse shaft at the top, on which is a crank wheel, C; to this crank is attached a connecting rod, D. This rod is attached to a spring, E, and works the hammer in the guide brace, F. These are the principal points. When the hammer is given a reciprocating movement by the parts alluded to, it strikes with a force proportioned to its velocity. When the revolutions are increased rapidly, the efficiency of the machine is very great—a hundred-pound hammer being capable of drawing a four-inch bar down to any desired thickness at one heat; it strikes with irresistible force, and is equal in round numbers to a blow of 20,000 lbs. weight. While this efficiency is obtained, the arrangement is such that the working parts above receive no injury, for the hammer head is attached to a peculiar connection, G, which is made of leather belting, so that it is held suspended, and free from communicating any shock or jar to the shaft and bearing.

The dies are also well arranged for convenience. By reference to the engraving it will be seen that a wedge, H, is employed as usual, but instead of battering at it with a sledge for some minutes in order to loosen it, a bolt is screwed into the frame so that by one turn of it the dies can be removed in a moment. This feature is of great importance.

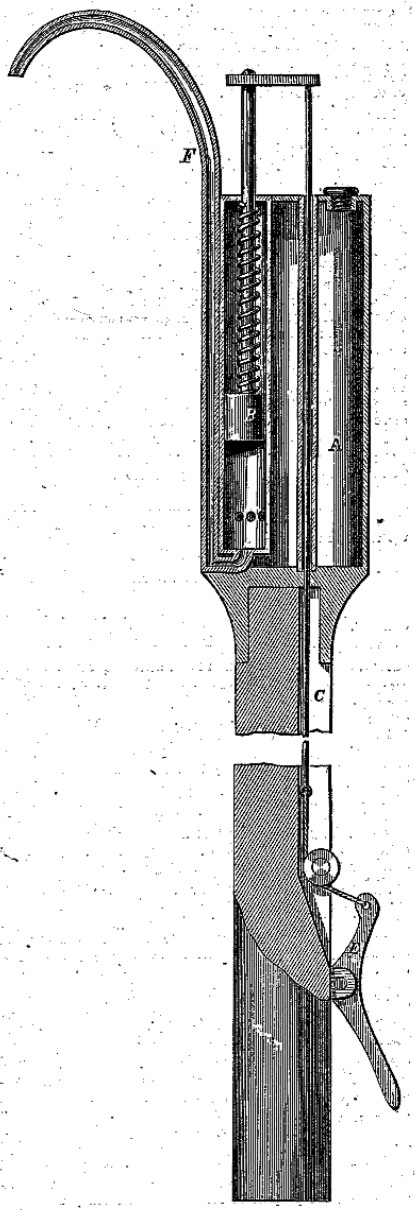
We are not able to give, in a short article like this, a just idea of the utility of the hammer. It is capable of being applied to a great variety of uses and is so simple that it can be worked by one man. The belt tightener which operates the hammer can be worked by the foot of the smith, and when he has a heat ready he can work it off without the necessity of calling his helper. It can be run fast or slow, strike light or heavy, will forge thin steel, and may even be run on the dies with impunity. It is confidently recommended as a useful and economical tool. The manufacturer has had one in use forging plates for car springs for a long time and no repairs of any amount have been needed.

This power hammer was invented by Thomas Shaw, and is manufactured by Philip S. Justice, No. 42 Cliff street, New York, and No. 14 North 5th street, Philadelphia, to whom all orders should be addressed. Patented Feb. 27, 1866.

COAL oil is a better substance for preserving potassium and sodium than naphtha. In coal oil, sodium keeps its luster for months, while in the purest naphtha it is dimmed in a few days.

KING'S OILER.

Any one who has seen a laborer oiling shafting in a factory must have often trembled for his safety. Many lines of shafting are so full of pulleys hat it is scarcely possible to get a ladder near the bearing to be oiled, and the man often reaches his arm in among rough-edged pulleys and couplings, with projecting bolt heads, at the risk of having it torn from his body. The common way of pouring oil from a can is also wasteful, for much more is applied than is necessary.



This oiler is claimed to be an improvement on the old plan, for it is not necessary to use a ladder at all, and the quantity of oil discharged at once can be seen. The details consist of a vessel, A, filled with a cylinder in which a plunger, B, works. This vessel, A, is filled with oil which finds its way to the small cylinder through holes in the bottom of the same. The plunger is operated by a wire, C, which runs down to the bottom of the shaft, D, on which the oiler is fixed. This shaft may be made of any desired length. By pressing on the lever, E, the plunger will be drawn down and oil forced up through the pipe, F, on to the bearing over which it is held. It is claimed that this is a desirable instrument for the purpose.

It was patented through the Scientific American Patent Agency by John King, of Ansonia, Conn., on July 10, 1866, who wishes to dispose of county or State rights.

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ARTISTS AND ARTISANS.

It is gratifying to notice our progress in refinement, as shown in the desire of our engineers and mechanics to consider the beautiful, as well as the useful, in their productions. It is only within a few years that any attention was paid by them to beauty of form, while they consulted safety, strength, necessity, and durability in their works. Indeed, a strong prejudice deterred the mechanic from embodying his ideas of beauty and harmony in forms of strength and utility. A bridge was simply a structure to permanently connect two points, and if the ends of strength and durability were attained, the design of the builder was fully answered. A machine was simply an agglomeration of masses of metal and wood—looking only to the utilitarian, and offensive to the eye and the taste. The gratification of taste was deemed a weakness.

As the demands of the world increased the products of the mechanic, educated taste revolted at the permanent divorce of the useful and the beautiful, and an attempt was made to reconcile the two by adding to the misshapen structure an overlay of meretricious ornament—carving, painting, and gilding. The radical deformities were thus brought into more repulsive relief, and the eye, offended, turned to less pretentious structures, which assumed to fulfill only the object of utility.

A new element of beauty has, however, been introduced into our mechanical progress. It is that of form rather than of ornament. An unadorned structure, possessing a graceful form, is more pleasing than an uncouth mass decorated with inharmonious gewgaws. A church, fashioned like a barn, may be commodious and answer the purpose of congregational worship, but however plain it may be, there is no reason why it should not possess distinctive characteristics to denote its uses and not offend the eye. The lines of a bridge need not be ungraceful. A tall chimney need not be uncouth. In fact, the architect, the engineer, and the mechanic may be artists and in no way detract from their usefulness. It is their duty to consult the requirements of correct taste as well as to follow the rules of mechanical construction; for every work of art subserves the purposes of education, and a love of the beautiful is implanted in our nature for a wise and benevolent purpose. To be sure, there is a beauty in the perfect adaptation of the means to the end. There is a satisfaction in witnessing the operations of a machine which answers the end proposed by the builder, apart from the form which the material is made to assume; but beyond this is the gratification of taste in viewing a perfect union of the useful with the beautiful. And there is no valid excuse for the designer if he wantonly neglects this higher demand while endeavoring to subserve the lower requirements of use; for in the hands of the mechanic all materials become plastic, and he is false to his better tendencies if he forces them to assume outlines offensive to the eye, when this object of symmetry can be attained without sacrificing utility. And certainly, the cases are few where both these objects may not be attained.

Viewed rightly, an invasion of the sphere of the artisan by the artist is no degradation of the latter. It is not necessary to refer to the example of some of the greatest artists to illustrate this fact; nor is it puerile for the artisan to study the specialty of the artist, and endeavor to catch and fix the spirit of beauty in his works. We look for a rapid improvement in this matter now that it is not thought beneath the dignity of institutions of learning to recognize the mechanical engineer as a proper object to wear their honors. When the mechanic is conceded his proper place he will rank with the discoverers in science, the masters in literature, and the ministers of the beautiful, and with them be considered as an educator of the race.

TOOLS FOR SPECIAL AND FOR GENERAL USE.

Possibly it is prejudice, but we confess we always look upon a combination tool with a certain degree of suspicion. Yet the genius of our inventors seems to be guided in the direction of constructing appliances for work which are intended to be capable of performing several very distinct and differing branches of labor. Sometimes the combinations are successful, but oftener not. A machinist's lathe will turn a shaft or cut a screw with equal facility; but let the same lathe be used indiscriminately for turning wood and iron, or for chucking, boring, drilling, and turning, and it will soon be found that it fails to do one, perhaps all these differing processes, with the exactness and nicety required. The results of the work done by the planer and the milling machine are frequently very similar, but what machinist does not know that the latter is invaluable even when he possesses one of the best of the former. Again, the milling machine is but a modification of the gear cutter, yet the latter is necessary for accuracy. The shaping machine, working with adjustable crank, with quick return motion, is but a miniature and restricted planer; yet both are necessary to rapidity and perfection in doing work.

Probably no tool used by mechanics generally is capable of so many diverse applications as the lathe, and because of this it is often greatly abused. Take a well-adjusted screw-cutting turning lathe, and screw on the live arbor a massive universal, or scroll chuck, which receives a pulley or gear weighing fifty or one hundred pounds. Then apply the drills and reamers, or the resistance of a turning tool against the rim of a wheel as large as the lathe can swing. How long will it be before the lathe cannot be depended upon to turn a shaft or cut a fine screw? The intelligent manager, knowing that this application of one tool to varying purposes is seldom successful, furnishes his shop with "special tools," and in this he is right and reasonable. Let the screw lathe, the chucking lathe, the drilling lathe, each do its legitimate work, and be confined to its specialty. Let the planer be restricted to planing, and never forced to do the work so much better performed by the milling or the shaping machine, and the employer, customer, and workman will be gainers. We have seen a mechanic calling himself a workman planing in a lathe. Cutting a key-way by means of the carriage of a lathe may be a bright idea, but it is not a profitable one.

We prefer to see a machine or tool specially designed for a particular department of labor, and confined to that use; and where this plan is followed, we may be sure the work turned out will be of the best quality; at least the fault will not be because of imperfect tools.

It may be that commonly-used implements can be adapted to two or more purposes. We know of such cases, but they are when the tool is one that cannot be injured for one class of work by using it for another. Still, in the general use of tools, those will be found to be most serviceable which have a particular work to perform, and are not diverted to strange and unnatural uses. Every shop or mechanical concern should be furnished with tools perfectly adapted to the specialty of its business. It is well enough for small manufacturers to utilize the means at their hand, and compel their tools to do double duty; but when in a position to avail themselves of tools specially designed for the different departments of their work, they are blind to their own interests if they waste the time necessary to convert a tool or machine from its legitimate purpose, and adapt it to a new one, and risk the injury to tools and the unfinished state of a job, together with their reputation, for this false economy.

ENGINES OF THE STEAMSHIP "RISING STAR."

The magnificent paddle wheel steamship *Rising Star* made her engineer's trial trip on the afternoon of the 11th, running from the foot of King street, North River, to below the outer Quarantine and returning. She is a noble vessel, unusually strongly built, and fitted up in the most complete and thorough manner. She was intended originally for the New Orleans route, but is, we believe, to run on the Atlantic route to Aspinwall, under the auspices of the Pacific Mail Steamship Company.

The main boilers are 30 feet long by 15 feet 9 inches diameter, of Smith's pattern, with a double tier of furnaces. The fire surface has 12,500 square feet, and the grate surface 400 square feet. The cylinder is 100 inches diameter with 12 feet stroke. The wheels are 36 feet diameter and 12 feet face, the paddles divided and graduated, and one wheel set in advance of the other, designed to prevent that unpleasant jar usually noticed in paddle-wheel ships. That this object was attained was evident to all who accompanied the ship on her trial trip.

She has a tubular condenser with a surface of 5,000 square feet. The cylinder is provided with a super-heating steam jacket, the steam for the jacket being supplied by an independent boiler, at a pressure of about ten pounds more than that of the steam supplied to the cylinder from the main boilers. The steam in this auxiliary boiler is made from salt water, and after circulating in this hollow cylinder head, the jacket, and cylinder bottom, enveloping the working cylinder, it passes to the main boilers, thence to the piston, performing its work, when it is condensed and used to supply the main boilers. By this means these boilers are supplied with comparatively fresh water—a great desideratum which has never yet been fully realized on any sea-going vessel. This jacket of high steam is hotter than the steam used in the cylinder, preventing any loss of power by radiation.

The rims of the wheels are planed to an edge before being formed into segments, so that the peripheries between and outside the paddles offer but little resistance in passing through the water.

The pillow blocks are peculiar, being arranged to admit of the removal or repair of the brasses without the usual labor and cost of disconnecting the engine, and also admitting of the "lining up" of the engine without disturbing the fastening of the pillow blocks. Practical engineers will see at once the advantages of this arrangement.

The engine was built at the Etna Iron Works, this city, from the designs and under the direction of Erastus W. Smith, A. P. D., assisted by Mr. Thomas Main, engineer for the builders.

The *Rising Star* was commanded on her trial trip by Captain Horatio Nelson, and in all respects the test was a most satisfactory one, the engine, during a portion of the time, making 18 turns per minute with perfect ease and without jar.

THE nineteenth annual exhibition of American manufactures and the mechanic arts of the Maryland Institute will be opened at the hall of the Institute, at Baltimore, on Tuesday evening, Oct. 2, 1866, and continue to Oct. 30th. Exhibitors intending to compete for the premiums must enter their goods by the 27th September. For further information address the Actuary of the Institute.

ISSUED FROM THE U. S. PATENT OFFICE

FOR THE WEEK ENDING AUG. 14, 1866.

Reported Officially for the Scientific American.

☞ Pamphlets containing the Patent Laws and full particulars of the mode of applying for Letters Patent, specifying size of model required, and much other information useful to inventors may be had gratis by addressing MUNN & Co., Publishers of the SCIENTIFIC AMERICAN, New York.

57,061.—PITMAN BOX.—A. S. Acker, Albion, New York.

I claim the combination of the cap, C, as described, part, B, with the reservoir, E, opening into the inner face thereof, the flanged ball, d', and the pitman, A, arranged and operating in the manner and for the purpose specified.

57,062.—MOLD FOR CASTING THROTTLE VALVES.—R. B. Angus, Tremont, Pa.

I claim the blocks, B C, and screw clamp, D, in combination with the cylinder, A, all constructed and operating substantially as and for the purpose specified.

57,063.—METHOD OF MAKING SMOKE BELLS.—J. S. and T. B. Atterbury, Pittsburgh, Pa.

We claim the method substantially as herein described, of producing glass smoke bells and other articles, consisting in blowing the glass in divided molds, and then shaping the bells over conical fluted formers, substantially as set forth.

57,064.—LAMP.—Chas. H. Bagley, Elgin, Ill.

I claim, First, So arranging or hanging within the top of the lamp in which a wick is used, a metallic or other suitable scraper or trimmer that it can be moved forward and backward over the said wick at the other end of the wick tube, substantially as and for the purpose described.

Second, In combination with the above, so placing a receptacle upon the wick tube of a lamp and below its upper end that it can be readily removed or replaced at pleasure, substantially as and for the purpose specified.

Third, Forming the upper end of he wick tube of a circular or curved shape, in combination with a slot in the lamp cap piece, and the receptacle, J, or its equivalent, when arranged together, substantially as described and for the purpose specified.

57,065.—SPINNING FLYER.—B. A. Bailey, Lewiston, Me.

I claim constructing the abutting check of the spring, h, from its own wire at the upper end thereof, substantially as shown and described.

Also in combination with the shaft, c, and spring, h, the clutch, g e, when constructed, arranged and operating substantially as described.

And the combination with the part, e, of the clutch, of one or both of the stops, f, as described.

57,066.—GARDEN RAKE.—Milton G. Baker, New Burlington, Ohio.

I claim pivoting or jointing the handle, A, to the head, B, of a garden rake, substantially as and for the purposes herein specified.

I also claim the flattened and sharpened ends of the head, B, for the purpose set forth.

I also claim the peculiar construction and arrangement of the two outer teeth, G G, for the purpose set forth.

I also claim the construction and arrangement of the middle teeth, H H, for the purpose specified.

57,067.—GRUBBING MACHINE.—Cortland Ball and J. W. Houghtelin, Detroit, Mich.

We claim the arrangement of the drum, C, ratchets, D D, lever frame, E, pawls, G G, clamp or chain, H H, applied in combination with the axle, A, of the wheels, B, all constructed and operating in the manner and for the purpose described.

57,068.—MODE OF HITCHING HORSES TO SEEDING MACHINE.—D. C. Baughman, Tiffin, Ohio.

First, I claim pivoting the double tree, A, to an inclined rod, a, which is supported at its upper and lower ends and made adjustable in a direction with its length, substantially as described.

Second, The adjustable screw rod, a, having the double tree pivoted to it and provided with adjusting set screws, c c, and a lower brace, e, substantially as described.

57,069.—MALT SHOVEL.—William Beach, Albany, N. Y.

I claim the construction of a wooden shovel by making the handle with a cross bar separate from the blade, and fastening them together with screw bolts, or rivets and straps, so that they may be separated from each other, in the manner and for the purpose described.

57,070.—VEGETABLE CUTTER.—David Bearly, New Castle, Ind.

I claim the arrangement of a vegetable cutter having the gearing, C D, frame, H, curb, C, and cover, C', with a revolving disk, G, bearing adjustable knives, the several parts being attached, connected and arranged, substantially as set forth.

57,071.—PORTABLE DRUG CRUSHER.—H. C. Becker, New York City.

I claim connecting in a drug crusher and cutter, the plate, cutter and crusher, under the arrangement, substantially as set forth

57,072.—SAFETY POCKET.—John A. Bell, Lacon, Ill.

I claim the clasp or pin, D, in the described combination with the bar, C, and elastic thong, A, to admit of the latter being readily applied to the garment or detached therefrom at the will of the user.

57,073.—FARM FENCE.—John S. Bettis, Hanover, N. Y.

First, I claim the hook, c, as a means of holding and connecting the rails and post made either with a single or double loop, substantially as herein described.

Second, I claim the hook or staple, C, with a single or double loop, made adjustable on the post by means of the key or wedge, d, substantially as set forth.

57,074.—HAT PROTECTOR.—G. W. Bidwell, New Haven, Ct.

First, I claim the combination of three or more pins, a, on the top of the hat, when constructed and arranged to operate in the manner and for the purpose herein set forth.

Second, The combination and arrangement of three or more pins, p, upon the brim of the hat, substantially as and for the purpose specified.

57,075.—WASHING MACHINE.—B. Bisbee, East Pharsalia, N. Y.

First, I cl im the slats, B B, having their edges beveled off on opposite sides, as shown, to form the openings for admitting to the interior of the cylinder the suds or water, substantially as shown and described.

Second, The cleats, C C, secured upon the inside of the slats, B B, at an angle therewith or obliquely, substantially as and for the purpose herein specified.

Third, In cylinder washing machine, I claim the employment of the catch, D d, for automatically locking the lid or door of the machine, and holding it when closed as well as providing a quick means for liberating the door when desired, substantially as herein shown and described.

57,076.—HAT RACK AND SEAT.—Edward S. Blake, Pittsburgh, Pa.

I claim the hat rack, f, in combination with the seat, c, constructed, arranged, combined and operating substantially as herein described and for the purpose set forth.

57,077.—HOOP-SKIRT SUPPORTER.—Erastus Blakeslee, Plymouth, Ct.

I claim the combination of the two hooks, A B, united together by, and combined with a hook or its equivalent, C, and arranged in relation to a corset and skirt, substantially in the manner and for the purpose specified.

57,078.—FLOORING CLAMP.—Asa S. Blinn and D. W. Hewitt, Dubuque, Iowa.

We claim the arrangement and combination of the head block, A, arms, H, pawls, C, with the screw, B, ratchet wheel, T, pall, F, and lever, D, when constructed to operate substantially as described.

57,079.—OIL INJECTOR FOR STEAM ENGINES.—G. B. Brayton, Boston, Mass. Antedated July 30, 1866.

I claim the construction by which the oil orifice of the injecting barrel is worked through a packing, inserted and compressed between the reservoir and steam tube, substantially as set forth.

57,080.—ROOFING.—Albert Brisbane, New York City. Antedated Aug. 3, 1866.

I claim the construction or roofing or weather boards, formed in a curved or trough shape, by bending, and laid together and combined with the concave rafters or bearers as herein described.

57,081.—GANG PLOW.—A. H. Burlingame, Sparta, Ill.

I claim, First, The combination of the tongue, G, pivot, f, rockbar, G', plow beams, D D, and laterally adjustable support, J, substantially as and for the purpose described.

Second, The rear under support, J, applied and operated substantially as herein described for the purposes set forth.

Third, The perforated rocking bar, G', tongue, G, plow beams, D D, laterally adjustable rear support, J, and the device, h j k, all combined and arranged substantially as described.

Fourth, The combination of the vertical joint, f, and the horizontal joint, G', with plow beams, D D, and a carriage, A B B', which is susceptible of being depressed or elevated at one or both ends, substantially as described and for the purpose set forth

57,082.—HARVESTER.—Caleb Cadwell, Waukegan, Ill.

First, I claim the circulating cutting device, consisting of the teeth, F', when constructed as herein described and employed in combination with the sprockets, G, G', in the manner and for the purpose set forth.

Second, I claim the arrangement of the finger beam, A, cap plate, B, stationary cutter bar, E E', plate, C, guide, D D', plate, J, and cutting device, F F', all constructed and operating as herein shown.

Third, I claim the rotating blocks or sprockets, G G', and hollow journals, G2 G3, when combined and arranged as and for the purpose herein shown and described.

Fourth, I claim the reels consisting of the parallel arms, K, chains, K', wheels, L M, uprights, O, and adjustable arms, N, all constructed and arranged in the manner and for the objects specified.

57,083.—PHOTOGRAPHIC PRINTING FRAME.—J. W. Campbell, New York City.

I claim, First, Holding the plate to the back of the photographic printing frame by atmospheric pressure, substantially as and for the purpose described.

Second, The double hinged section, C, in combination with the backs, B, and the frame, A, substantially as and for the purpose described.

Third, The lock, D, in combination with the double hinged section, B, and back, B, constructed and operating substantially as and for the purpose described.

57,084.—LET-OFF MECHANISM FOR BRAIDING MACHINES.—James M. Carpenter, Providence, R. I.

I claim the combination of the tube, T, the stud, f, and groove, g, or their equivalent, with the spool, its spindle and the let-off mechanism or its equivalent.

I also claim the improved let-off mechanism, consisting of the gear with one range of teeth and of the dent and wedge lip applied to the spindle and the tension weight, substantially as specified.

57,085.—CORSET CLASP.—John W. Carter, Greenville, N. J.

I claim the armed looped clasps, D E F, made in one piece, and secured substantially as described for the purpose specified.

57,086.—PUMP FOR DEEP WELLS.—Aaron Carver, Little Falls, N. Y.

First, I claim the pump cylinder in combination with an outer cylinder, J, within which it is eccentrically placed so as to form a chamber, L, between them, substantially as described.

Second, I the claim locking the valve box of a pump within the cylinder so that it cannot be displaced by pressure from below, substantially as described.

Third, I also claim making the diameter of the neck of the valve box less than that of its body and perforating it as described to allow any liquid in the valve box to escape and make way for the end of the piston when the latter is screwed into the neck of the valve box, substantially as above set forth.

57,087.—REGULATOR FOR GAS BURNERS.—William Clark, Boston, Mass.

I claim, in combination with the tip of a gas burner, a regulating device constructed of the fruste conical valve and valve seat, with the cross bar n, and the screw spindle, d, operating together in the manner described.

57,088.—SAW.—William Clemson, Middletown, N. Y.

I claim slots, f, one or more, made in the shanks or tangs of the teeth or in the saw plate, or both, and having such a relative position with the rivets, clamps, or fastenings, as to form springs or elastic strips, E, to bear or bind against the rivets, clamps or fastenings with an elastic or yielding pressure, substantially as described.

I also claim the plate or clamp, G, fitted in the recess, F, in the saw plate in connection with the recess, D, in the shank or tang, a, substantially as and for the purpose set forth.

57,089.—WATER WHEEL.—Walter R. Close, Bangor, Me.

I claim the improved water wheel made substantially as described, viz., with the arched annulus, the series of curved and bent wings and the shaft tube or the same and its flange, arranged as set forth.

57,090.—THILL COUPLING.—Geo. E. Clow, Port Byron, N. Y.

I claim the socket, C, catch, d, and shoulders, e e, employed in connection with the thill iron, A' A' a, substantially as and for the purpose specified.

57,091.—METHOD OF SPREADING MASTIC ROOFING.—Winfield R. Coe, West Meriden, Ct.

I claim the combination of the guiding and pressure roller, B, the box or hopper, A, and the adjustable spreading board, F, with each other, substantially as described and for the purpose set forth.

57,092.—WHEEL TIRE.—Ebenezer Coleman, Woburn, Mass.

I claim the arrangement and combination of the series of notches, c c c, and teeth d d, or their equivalents, and the slot, e, with the tire lsps, a b, the same being to operate together with a felly and confining bolts, substantially as specified.

57,093.—MODE OF DISINFECTING BONE-BOILING ESTABLISHMENTS.—Dominique E. Contaret, New York City.

I claim the disinfection of bone-boiling and fat-melting establishments, by means of chemical process and reagents, or any others substantially the same, and which will produce the intended effect as desired.

57,094.—RUNNING GEAR OF CARRIAGES.—Francis Crick, Beanesville, Ohio.

First, I claim the semicircular or horse shoe springs, D and F, constructed as described, in combination with the axles, D and J, and with the body, A, of the carriage, substantially as described and for the purpose set forth.

Second, The gearing consisting of the reach, M, the lever, N, the circular arm, K, the horizontal arm, L, and king bolt, I, constructed and arranged as herein described in combination with the axles, E and J, substantially as described and for the purpose set forth.

57,095.—BURNING FLUID.—James P. Cross, Watertown, N. Y.

I claim the combination of the within ingredients in the manner and about the proportion described, for the purpose specified.

57,096.—CURTAIN FIXTURE.—W. R. P. Cross, Portland, Maine.

First, I claim the combination of the bent wire having the ring and hook, with the curtain roller sheave, as and for the described purpose.

Second, The combination of the wire, h, having the friction hook, i, and swivel, j, with a curtain cord, tassel, and roller, in the manner and for the purposes set forth.

57,097.—LIQUID MEASURE.—James Dailey, Albany, N. Y.

First, I claim the combination of the vessels, A and B, with a spiral or other spring, C, and index plates, one or more, D, and indices, b, substantially as shown and described for the purpose specified.

Second, I claim the spiral spring, C, in combination with the vessels, A and B, substantially as and for the purpose specified.

57,098.—TRACE BUCKLE.—John Wesley Denton, Paris, Ill.

First, I claim the check, A; clamp, E, and tongue, F, arranged and adapted to operate as set forth.

Second, In combination with the elements of the clause immediately preceding, I claim the spring, N, attached to the heel of the tongue, and operating as set forth.

57,099.—MACHINE FOR TURNING WAGON SPOKES.—T. Derington, Carbondale, Ill.

First, I claim the feeding and governing pattern, constructed with irregular grooves or threads, substantially as and for the purpose set forth.

Second, The arrangement of the rollers, b' b', straps, b b, and horizontally adjustable beam, C2, with rail on its top, in a machine which is constructed and operated substantially as described, all for the purpose set forth.

Third, The arrangement of the spring, e', with its roller, f', upon the cutter carriage and the rail, f, for holding the tooth, c', up to the patterns, substantially as herein described.

Fourth, The arrangement with the cutter head of a pulley on both ends of its shaft, and applying belts which move with the cutter carriage on both of said pulleys of the head, all for the purpose of driving the cutter with a more regular and steady motion, as herein set forth.

Fifth, The combination of a cutter head constructed with right and left auxiliary sets of cutters, S S, and a central main or finishing set of cutters, with a reciprocating carriage and the feeding pattern, constructed as described, so that the work of roughing and smoothing is performed at one time, and also during the back as well as the forward movement of the cutter carriage, substantially herein described.

57,100.—AXLE AND JOURNAL FOR CARRIAGES.—Lathrop Dorman, Worcester, Mass.

First, I claim the combination with the axle, A, and projection, B, of the wrist, G, hollow journal, D, nut, E, and shoulder, C, substantially as set forth.

Second, The combination with journal, D, of nut, E, and projection, B, substantially as set forth.

Third, I claim making the journal, D, hollow its entire length, and providing it with a wick, f, which passes through hole, h, whereby the outer surface of journal, D, is always kept lubricated, so that the end, I, accidentally broken off, can be removed, substantially as set forth.

57,101.—BUTTON.—R. N. Eagle and C. D. Smith, Washington, D. C.

First, We claim a button or button-head made of soft rubber, or analogous elastic material, substantially as described.

Second, We claim a button or stud having one or more elastic heads and a shank of different or harder material.

Third, We claim a rubber head attached to a metallic tubular shank by means of a stem, a, which is held within said tubular shank, substantially as described.

Fourth, We claim the combination of an elastic head, A, metal shank, B, and disk, C, substantially as and for the purpose herein set forth.

57,102.—SHOE CLEANER.—B. Frank Early, Palmyra, Pa.

I claim a frame composed of adjustable side pieces, substantially as shown, in combination with rods having corn husks or other suitable substance doubled or adjusted around them, and fitted or clamped within the frame to form a new and improved mat, for the purpose specified.

57,103.—APPARATUS FOR RENDERING TALLOW, ETC.—J. J. Eckel and I. S. Schyler, New York City.

We claim, First, The two kettles, B C, the latter, C, being fitted within the former, B, and sufficiently less in diameter to admit of a space, c, between them, in combination with the holes, d, in the kettle, C, substantially as and for the purpose set forth.

Second, The rosary, strips, K, placed within the kettle, C, when used in connection with the case, D, or other cover for the kettles, for the purpose specified.

Third, The condensing apparatus composed of the chambers, E, or other suitable or equivalent water passages in the tube, D, for the purpose of admitting of the kettles being closely covered during the cooking or rendering process.

Fourth, The receiver, H, arranged with the pipes, G J, substantially as shown and described, to serve as an auxiliary to the condensing apparatus, and also to insure the drawing off of the condensed steam or vapor from D.

57,104.—APPARATUS FOR RENDERING TALLOW.—John J. Eckel and Isaac S. Schyler, New York City.

We claim, First, In rendering tallow, the drawing off of the vapor or vapors from the contents of covered, or confined, or partially confined kettles, by means of a suction or a vacuum produced in pipes by any suitable mechanical means.

Second, The injecting of the vapor or vapors drawn off from the kettles into the fire, by which the contents of the kettles are cooked either by the direct application of the fire or through the agency of steam generated by the same, substantially as set forth.

57,105.—MACHINE FOR CUTTING TURF.—Richard H. Emerson, Fond Du Lac, Wis.

I claim a machine for cutting turf, having a shaft, A, wheels, B, stops, D, knives, C and F, constructed and arranged substantially as herein specified.

57,106.—FRUIT PICKER.—Elijah Evans, Sparta, Ohio.

I claim, First, A fruit picker in which two quarter spherical

jaws, C, are caused to close by mechanism, operating substantially as set forth.

Second, Attaching the jaws, C, by a single rivet on one side, and by separate rivets on the other, so as to produce a shearing motion by the junction of their edges, substantially as set forth.

Third, In combination with the jaws, C, I claim the lugs, C', and pins, D2, actuated substantially as set forth.

Fourth, The device for actuating the jaws of a fruit picker, consisting of the pulleys, D and D', the spring, E, cords, G C and A, or their equivalents, and bell crank, I, attached to the handle, A, said several parts being respectively constructed, and the whole combined for use substantially as set forth.

57,107.—SCREW DRIVER.—Cyrus Eversol, Commerce, Missouri.

I claim, First, Forming the face or edge of the screw driver, B, in the form of a cross with equal arms, substantially as described and for the purpose set forth.

Second, The combination with the handle, C, of the screw driver of a ratchet wheel, D, and pawl, E, constructed and operated substantially as described and for the purpose set forth.

57,108.—VALVE FOR THE HULLS OF VESSELS.—J. H. Fairbanks and Frederick Roads, McKeesport, Pa.

We claim a valve, A, applied to and arranged in the hull of a vessel, so as to operate and to be operated substantially in the manner described and for the purpose specified.

57,109.—PICKER FOR FIBROUS MATERIALS.—Levi Ferguson, Lowell, Mass.

I claim the arrangement of the comb plates, E, with their arms moving in slots, b, of the frame, the cam grooves, c, and the segmental apron, D, operating with the picker cylinder, A, all constructed in the manner and for the purpose herein specified.

57,110.—HORSE HAY FORK.—Daniel Figge, Jenners Cross Roads, Pa.

I claim the bars, A and B, constructed as shown and described, and arranged to operate in combination with the lever, C, as and for the purpose set forth.

57,111.—MACHINE FOR CUTTING FAT, LARD, ETC.—Charles Forschner, New York City.

First, I claim the arrangement of a series of knives, F and J, crossing each other in the end of a trough or longitudinal box, C, in combination with a piston, D, capable of passing into the openings formed by the knives, F and J, in the manner and for the purpose substantially as described.

Second, I claim in combination with the above the knives, N, operating at right angle to the trough, C, or to the motion of the piston, D, in the manner and for the purpose substantially as set forth and specified.

57,112.—METHOD OF TRANSMITTING POWER BY MEANS OF RAILROAD CARS OPERATING UPON RAILS.—Clinton Foster, Galesburg, Ill.

First, I claim the oscillating lever, B, arranged to operate in combination with the rail, A, substantially as and for the purpose set forth.

Second, I claim the use of the rubber springs, h, in combination with the lever, E, and pitman, n, as shown and described.

57,113.—CORN HARVESTER.—F. F. Fowler, Upper Sandusky, Ohio.

I claim, in combination with a machine for cutting corn, a pivoted holding and transferring lever, with its cord, pulley, hook, and reel, for compressing and holding the shock of corn while being transferred from the machine and set up upon the ground, where it may be bound, substantially as herein described and represented.

57,114.—HORSE HAY FORK.—F. F. Fowler, Upper Sandusky, Ohio.

I claim locking and releasing the brace, G, by means of the cord or rope, e, which is also the guiding and directing rope of the fork, substantially as described.

57,115.—STACK BOTTOM AND FEED RACK COMBINED.—F. F. Fowler, Upper Sandusky, Ohio.

I claim a portable stack bottom, feed rack, and stock shelter, constructed, arranged, and operating as herein described and for the purpose set forth.

57,116.—FEED WHEEL OF SEWING MACHINE.—Anton Galleth, New York City.

I claim the nose, e, on the jointed feed lever, C, in combination with the friction block, B, and feed wheel, A, constructed and operating substantially as and for the purpose described.

57,117.—DRYING HOUSE.—H. B. Gallup and Charles Wood, Watertown, Wis.

We claim a drying house, having its walls constructed of brick, stone, iron, or other fire-proof material, provided with a flooring of metal bars, and arched roof, provided with meta: vent-pipes, and the interior surfaces of its walls provided with gutters, all arranged substantially in the manner as and for the purpose set forth.

57,118.—WATER GAGE FOR STEAM GENERATORS.—George M. Githens, New York City.

I claim, First, The arrangement of the secondary water-pipe, F, with the connection, D, in combination with the gage, B, for the purpose of obtaining a constant flow through said pipe and connections, substantially as herein set forth.

Second, The three-way cock, E, in combination with the connecting pipe, F and D, arranged for the purpose substantially as herein specified.

57,119.—HOE.—James Glasson, Brooklyn, N. Y.

I claim the hoe constructed and attached to the handle, in substantially the manner specified.

57,120.—MACHINE FOR CUTTING BARREL HOOPS.—Andrew Goodyear, Springport, Mich.

I claim, First, The use of the cam, I, in combination with the gear wheels, S1 S2, fly wheel, W, and vibrating rod, R, arranged and operated relatively with each other, and with the platen table and frame, substantially as and for the uses specified.

Second, The mode of securing the cutter-knife, C', by clamping it between the half beams, A, in combination with backing bolts, e, and nuts, n, substantially as herein described.

Third, The employment of a spring, j, in combination with recessed guides, L, for safely discharging a hook, h, or other cut article as set forth.

57,121.—STRAW CUTTER.—Heinrich Gottfried, New York City.

First, I claim the circular knife, E, placed eccentric on shaft, D, the latter being central or nearly so with the feeding trough, F, substantially as and for the purpose herein set forth.

Second, The compressing plate, L, or its equivalent, in combination with lever, K', and cam, K, shaft, I, bevel gears, H H, shaft, D, and knife, E, substantially as and for the purpose herein set forth.

57,122.—CLEANING WOOL AND WOOLEN GOODS.—William A. Govern, Holyoke, Mass.

I claim the use of the articles above named, or either of them, for the cleansing of wool and woolen goods, whether used alone or in combination with other ingredients, substantially as set forth.

57,123.—MANUFACTURE OF ILLUMINATING GAS.—H. D. Green, Portland, Oregon.

I claim the manufacture of illuminating gas from coal and sawdust combined, and subjected to distinctive distillation, substantially in the manner and for the purpose set forth.

57,124.—TAPS AND DIES.—Franklin S. Gregg, Cincinnati, Ohio.

I claim the process of manufacturing case hardened wrought iron taps and dies, substantially as described.

57,125.—PULLEY ATTACHMENT FOR RAISING WEIGHT.—George W. Gregory, Binghamton, N. Y. Antedated Feb. 14, 1866.

I claim the combination of the grapple and pulley, and the arrangement of the several parts whereby to facilitate the action and move the apparatus from place to place, substantially as and for the purpose herein set forth.

57,126.—CIGAR HOLDER AND HAT HOOK.—Charles Gschwind and John Grether, Union Hill, N. J.

We claim a device composed of two jaws, a b, sliding ring, f, springs, e, and sharp pointed hook, g, all connected and operating substantially as and for the purpose set forth.

57,127.—MACHINE FOR ADJUSTING CHAIN CABLES.—Charles Hall, New York City.

I claim the combination of a stretching frame for sustaining the strain incident to stretching the chain with a clamp link-holder, and with means of applying force to the chain held by the link-holder, substantially as set forth.

I also claim the combination of a stretching frame for sustaining the strain incident to stretching the chain with a hook link-holder, and with means of applying force to the chain held by the hook link-holder, substantially as set forth.

I also claim the clamp link-holder, with recessed jaws, constructed substantially as set forth.

I also claim the hook link-holder, recessed at its inner side, substantially as set forth.

57,128.—BRICK MACHINE.—Enoch Hallett, Hillsdale, Mich.

First, I claim the combination of the levers, R T, applied to the follower, F, substantially in the manner as and for the purpose set forth.

Second, The combination and arrangement of the segments, c c, chains, Q Q', and the segments, D D, and chains, J J, for the purpose of operating the mold carriage, L, and follower, F, as set forth.

57,129.—NECK-TIE SUPPORTER.—William H. Hart, Jr., of Philadelphia, Pa.

I claim, in combination with a neck-tie supporter, A, the loop, C, and catch, D, as arranged, substantially as described.

57,130.—CUTTING APPARATUS FOR HARVESTER.—M. P. Hathaway, Mankato, Minn.

First, I claim the endless cutting belt, B, provided with cutters, H, having diagonal or oblique cutting edges, and arranged relatively with the platform or bar, A, to operate in the manner substantially as and for the purpose set forth.

Second, The combination of the belt, B, wheel, C, wheel, D, rollers, E, sliding bar, F, guides, a a, screw, G, arranged and operating in the manner and for the purpose herein specified.

57,131.—WIND MILL.—John H. Heyser, Hagerstown, Md.

I claim the sail, a b c d, slides, e e, cords, p p, pullies, g g, and fulcrums, H H, in combination with the wind wheel, all constructed and arranged as specified, and for the purposes substantially as described and set forth.

57,132.—WASHERS FOR BOLTS.—Gibbons G. Hickman, Coatesville, Pa.

I claim providing the washer with a lip or lips, to be bent into a groove in the bolt, either with or without the lip, c5, to be bent against the side of the nut, according to the circumstances of the case, substantially as and for the purpose described.

57,133.—RAILROAD-CAR BRAKE.—Aaron Higley, South Bend, Ind.

First, I claim the combination of friction clutch, D, pulley, F, and clutch lever, G, the dog, I, ratchet wheel, b, and pulleys, E E', as and for the purpose set forth.

Second, The spring, H', swivel, T', and chains, c e, in combination with the chains, d', and spring, d, as and for the purpose set forth.

Third, The clutch pulley, E E', friction clutch, D, in combination with the ratchet wheel, b, and pulley, F, substantially as and for the purposes set forth.

57,134.—BASIN FAUCET.—Jacob Hills, Haydenville, Mass.

I claim as my invention the above-described improved faucet as made with the pivot, f, and stop, g, the valve, c, and the key, D, applied to the parts, A and E, as specified, and with the globe, B, of the discharging tube, B' applied to the base tube, A, in manner, and so as to be capable of being revolved thereon, substantially as specified.

57,135.—VULCANIZING FLASK FOR DENTISTS.—L. Hoffstadt, Philadelphia, Pa.

First, I claim providing the boiler, A, with a flange, a, in combination with the regulator, E, and hook-shaped screws, b, constructed and operated substantially as and for the purpose described.

Second, The regulator, F, in combination with the boiler, A, and dial, G, constructed and operating substantially as and for the purpose set forth.

Third, The lever catch, H, and stop cock, D, in combination with the regulator, F, adjustable screw, h, and boiler, A, constructed and operating substantially as and for the purpose described.

Fourth, The regulator, F, boiler, A, lever catch, H, stop cock, D, hammer, n, and bell, n, all constructed and operating substantially as and for the purpose set forth.

57,136.—PUNCH.—Cyrus B. Holden, Worcester, Mass.

I claim the slotted lever, A, pivoted arm, C, and lever, B, in combination with each other and with the punch, constructed and arranged substantially as and for the purpose herein set forth.

57,137.—COAL SCUTTLE.—James Holden, Philadelphia, Pa.

I claim, as a new article of manufacture, a coal scuttle made of flat wooden sides, shaped as described, in combination with the sheet iron casing, B B', substantially as described.

57,138.—GRAIN BINDER.—Solomon T. Holly, Rockford, Ill.

First, I claim the combination, in a binder, of the drum and arbor of the compressing strap with a ratchet wheel and pawl, substantially as set forth.

Second, The combination, in a binder, of the ring carrier with shear blades for cutting the binding material.

Third, The combination, in a binder, of the traveling fingers or forceps for gripping the end of the binding material with shear blades for cutting it, substantially as set forth.

Fourth, The combination, in the binder, of the traveling fingers or forceps and the instrument for carrying them around the gavel, with a stationary projection in the track of the binding material for retaining it in its proper place, substantially as set forth.

Fifth, The combination, in a binder, of the traveling forceps with a stationary inclined block for operating them, substantially as set forth.

Sixth, The combination, in a binder, of the traveling forceps with a heel extending across the opening between the jaws, substantially as set forth.

Seventh, The combination, in a binder, of the jaws of the traveling forceps with a guard, substantially as set forth.

Eighth, The twister, with radial jaws, projecting from concentric shafts, constructed and operating substantially as set forth.

Ninth, The twister with radial and hooked jaws projecting from concentric shafts, constructed and operating substantially as set forth.

Tenth, The combination of the twister with its driving shaft, by means of pinions and cog wheels, and the spring connection, substantially as set forth.

Eleventh, The combination, in a binder, of the traveling forceps with a movable driver for the band, substantially as set forth.

Twelfth, The combination, in a binder, of the movable driver for the band, with a ring carrier for carrying it around the gavel, substantially as set forth.

Thirteenth, The combination, in a binder, of the traveling forceps and movable driver with a directing instrument to guide the two extremities of the band together, substantially as set forth.

Fourteenth, The combination, in a binder, of the spool or reel of the binding material with the ring carrier by frictional contact, substantially as set forth.

Fifteenth, The combination, in a binder, of the swinging arm of the spool of the binding material with a movable bearing, and with a curved chair for said bearing, substantially as set forth.

Sixteenth, The combination, in a binder, of the ring carrier and spool of the binding material with mechanism for moving said spool slightly from the wheel that is in friction contact with it, substantially as set forth.

Seventeenth, The arrangement, in a binder, of the spool of the binding material and the mechanism for relieving its pressure upon the instrument that resists its turning by friction, in such manner that the turning of the spool, when the pressure is relieved, is sufficiently resisted by friction to neutralize the movement of the spool, substantially as set forth.

Eighteenth, The arrangement of guide for the binding material, spool, and friction tension mechanism, in such manner that the drawing of the material through the guide tends to move the spool from the friction tension mechanism, substantially as set forth.

57,139.—BOX FOR TOBACCO AND MATCHES.—Thomas Huckaus, New Baltimore, N. Y.

I claim a tobacco box, A, divided into two compartments, a b, one for holding smoking, and the other for chewing tobacco, and also provided with a match receptacle, D, substantially as herein described.

57,140.—HARVESTER PITMAN.—Butler J. Hunter, Ledyard, N. Y.

I claim the swivel piece, C, constructed with a chamber or recess for the reception of the pitman head, B, substantially as and for the purposes set forth.

I also claim the combination of the swivel piece, having a recess, with the boxes, F and G, and bolts, E, substantially as described.

57,141.—TIRE SHRINKING MACHINE.—Gideon Huntington, Almont, Mich.

I claim the combination of the platform, A A, movable heads, B B, wheel, L, with eccentric threads, G G, segments, H H, cogs, I I, and block, E, with the loops or beveled mortises and self-acting keys, when made and used as above described, and for the purpose herein set forth.

57,142.—MACHINE FOR MAKING AXLES.—Edwin F. Hurd, Johnsonville, N. Y.

First, I claim the adjustable compound guide and gage, v, constructed and operated substantially as described.

Second, The movable gage, v', used in connection with the dies, w', constructed and operated substantially as herein recited.

Third, The arrangement, on the same bed or platform, of the of the tilt hammer with dies, and the machine herein set forth.

57,143.—HARNESS.—Robert Huyck, Sheboygan Falls, Wis.

In combination with the wagon tongue, A, the springs, E E, and straps, F F, for the purpose set forth.

57,144.—CLOTHES DRIER.—Lewis T. Ilgin, Cedarville, Ill.

I claim the arrangement and combination of the slats, a b, with the rods, c c' c'', and elbow stops, d, substantially as and for the purpose set forth and described.

57,145.—LATHE FOR TURNING WAGON HUBS.—Hiram Inman, Hagaman's Mills, N. Y.

First, I claim the rotary cutters, P P, and fixed cutters, e e, attached to a carriage, L, on the frame, A, of the machine, and arranged in connection with the fixed heads, B B', and arbors, C C', between which the block, Q, is centered, substantially as and for the purpose set forth.

Second, The carriage, T, with cutter, W, and stops j j, attached, in connection with the arbors, S S', in the fixed heads, R R', substantially as and for the purpose specified.

57,146.—SHIP'S WINDLASS.—Peter H. Jackson, New York City.

First, I claim the sleeve, h, connected by the gearing, p q r, and s, with the shaft, c, in combination with the capstan barrel, f, and keys, i i, for connecting the said capstan barrel and sleeve to give to the said shaft, c, and windlass, a slower movement than that of the capstan, or allow of the separate movement of the capstan, as set forth.

Second, I claim the head, l, on the upper end of the shaft, c, in combination with the keys, o o, and capstan barrel, f, and gearing, p q r and s, as and for the purposes set forth.

Third, I claim the friction band, u, applied to the inner recess of the chain wheel, t, as and for the purposes set forth.

Fourth, I claim the combination of the friction strap, u, blocks, v, and 2, and cam, 3, applied substantially as and for the purpose set forth.

57,147.—PLOW.—David Jacoby, Mendota, Ill.

I claim for the arrangement said combination of the screw, P, and its lever by which the end of the plow is elevated or depressed and thus a deep or shallow plowing effected; the levers, L, for directing the lateral motion, and the hinged paddle, C, for regulating the vertical motion of the plow, with the diagonally set wheels as herein described.

57,148.—STREET LANTERN.—B. A. Johnson, Jeffersonville, Ind.

I claim a street lantern, having its base, A, made of cast iron or other suitable metal, and its body, B, of sheet tin or other suitable sheet metal, substantially as described and for the purpose specified.

I also claim the ferrule or sleeve, F, secured to the bottom or base, A, of a sheet lantern by means of arms, E, substantially as described.

57,149.—LAMP-CHIMNEY CLEANER.—W. J. Johnson, Newton, Mass.

First, I claim constructing the two arms of a lamp-chimney cleaner of a single piece of wire, or its equivalent, bent into the requisite shape, substantially as set forth and for the objects specified.

Second, Uniting the two arms, A A, by means of the spring, B or its equivalent, substantially as and for the purpose described.

Third, The loop or guide, d, substantially as and for the purpose described.

Fourth, Confining the material of which the brush is formed, by means of the serrated plate, G, and clasp, E, substantially as and for the purpose described.

57,150.—LATCH FASTENING.—Henry M. Jones, West Meriden, Conn.

I claim the reversible latch, consisting of the semicircular bolt, g, with its square end, q, and beveled end, r, handle, l, slotted plate, b, and end piece, c, arranged and operating in the manner and as herein described.

57,151.—UMBRELLA.—Daniel Kelly, Slatersville, R. I.

I claim the flanges, d and d', and spring catches, e, in combination with the two parts, c c', of the ribs of an umbrella, substantially as and for the purpose set forth.

57,152.—GATE LATCH.—Frank Ketcham, Elizabeth Township, Pa.

I claim the combination of the bracket, C, cap, D, wheel, F, post, B, and gate, A, substantially as shown and described.

57,153.—RECLINING CHAIR.—John Kline and Anton Schmacker, Cincinnati, Ohio.

First, We claim the arrangement of seat, A, hinged back, B C, hinged and sliding arms, D E, stationary posts, F, studs, G, notched channel, H J, spring latch, I, and retracting thongs and springs, K, for the purpose set forth.

Second, The sliding rest, L, adapted to support the seat when the chair is used in a sitting posture, and to support the feet when in a reclining posture.

57,154.—LADY'S IMITATION COLLAR.—Charles Lang, New York City.

I claim an improved article of manufacture, being an imitation of ladies' imitation collars, made of paper linen, cotton-lined paper, paper mixed with cotton threads or linen threads, cotton cloth, linen cloth, or similar material, made in the manner substantially as described, by one continuous operation, by embossing the design on said paper or similar material, and by remov-

ing the elevated parts thereof while lying on the die, for the purpose substantially as described.

57,155.—MEDICINE.—Joseph Levy, Chicago, Ill.

I claim the medicine prepared from decoctions and juices or powders of young oak tree rind, camomile flowers, parsley, black radish rind, peppermint, and cinnamon, in the manner and proportions herein described and specified.

57,156.—SNAP HOOK.—B. B. Lewis, New York City.

I claim a snap hook attached to a hitching strap, and constructed and applied substantially as shown and described, to admit of the detachment of the hook from the ring by the simple pulling of the rein or line to which the hitching strap is connected, as set forth.

57,157.—SEWING MACHINE.—Austin Leyden, Atlanta, Ga.

I claim the combination with the detainer, F, of the crank, H, and bar or rod, G, substantially as described.

57,158.—ROSE ENGINE LATHE.—Thomas Lippiatt, New York City.

I claim the combination of the movable dictator, h, and cutting tool, r, projecting arm, m, sliding rest, n, and sliding block, P, arranged relatively to each other, and operating in the manner as and for the purpose herein specified.

57,159.—FISHWAY.—Alonzo Livermore, Ashland, Pa.

I claim constructing a fishway or other conduit, with division walls built transversely to its length, and openings through said division walls and tubes or lips projecting therefrom in an oblique direction and against the current, by which construction the velocity of the current can be decreased as may be desired.

57,160.—DITCHING MACHINE. — Peter Lugenbell, Greensburgh, Ind.

First, The rotary excavator, composed of the cylinder, K, with blades, j, and rims, L L, attached and provided with movable plates, N, operated through the medium of the stationary cam, J, substantially as and for the purpose set forth.

Second, The adjustable curved strips, P P, in combination with the excavator, when the same is constructed substantially as and for the purpose specified.

Third, The coiters, Q, Q, in combination with the rotary excavator, substantially as and for the purpose set forth.

Fourth, The pendent plate, O, in combination with the rotary excavator, as and for the purpose specified.

Fifth, The combination of the rotary excavator with an adjustable frame, P, arranged as shown, and adjusted through the medium of a screw, substantially as described.

57,161.—CAR BRAKE.—George F. Lynch, Milwaukee, Wis.

First, I claim the ratchet or pawl bar, m, in connection with the lever, p, or the inclined face of the cross bar, o, by which the brakes are locked as applied at the one end or tripped by the bumper at the other end, as they are arranged and operated substantially as herein recited.

Second, The extra bar, v, in connection with the bumper or draw bar, constructed and operated as and for the purposes substantially as set forth.

Third, The combination of the cross head guide, bars, and slides, by which the motion of the bumper or extra bar is communicated to the levers, and through them or their equivalents to the brakes, as described.

Fourth, The use of the hand or ratchet wheel and stem, in combination with the other means herein recited for taking up the slack and wear, substantially as set forth.

57,162.—FOUNTAIN PENS. — Herman Wadeheim, Brooklyn, N. Y.

First, The combination of the hollow piston rod, b, piston, a, ink retainer, c, movable barrel, e, and pen, d, all constructed and operating substantially as and for the purpose described.

Second, The longitudinal partition, i, in the ink retainer, c, substantially as and for the purpose described.

Third, The stops, j, on the inner end of the body of the penholder, or on the end of the barrel, e, for the purpose set forth.

Fourth, The air channels, k, in the body of the barrel, as and for the purpose described.

57,163.—PISTON-ROD PACKING.—Richard Martin, Brooklyn, N. Y.

I claim a steam packing made by combining with the body of said packing, a covering consisting of wire and fibrous material, interwoven, intertwisted, or interbraided together to form said covering, substantially as set forth.

57,164.—APPARATUS FOR CARBURETTING AIR.—Hugh L. McAvoy, Baltimore, Md.

First, The air-forcing chamber, C, revolving in the tank, B, which is surrounded by the reservoir, A, in which the carburetting cylinder, or its equivalent, revolves.

Second, The inverted chamber, F, vibrating upon the axis and actuated by the varying pressure of the gas contained therein to operate as a regulator, substantially as described.

Third, The displacing chamber, c, in the chamber, C^1, operating as described.

Fourth, The carburetting cylinder, D, provided with cups or receptacles on its inner side, and with reticulated or permeable surface on its periphery.

Fifth, The chamber, B, containing the fluid in which the air-forcing cylinder revolves, and separating it from the fluid in the reservoir.

Sixth, The hanging stands or tapes, h', in the chamber, C, as and for the purpose described.

57,165. — STUFFING AND CURRYING LEATHER.—Thomas McDonald, Roxbury, Mass.

I claim the employment of caoutchouc or a solution thereof, substantially as described, with the oil and tallow or fatty matters used in currying leather.

I also claim the employment of beeswax and resin, or either, and a solution of caoutchouc with the oil and tallow or fatty matters used in stuffing leather, they being combined as set forth.

I also claim buffing the leather with a slicker, while such leather is damp, and subsequently coloring such leather and applying the stuffing to it as specified, not meaning to claim the application of the stuffing to the leather, and subsequently carrying on the operations of stuffing and coloring as set forth.

57,166.—HARROW.—William McFishback, Union, Ohio.

First, The arrangement in the plane of a harrow frame of two or more rock shafts, each being provided with teeth and cleaners, as described, in combination with coupling bars and levers for vibrating said shaft simultaneously, the whole being arranged for operation as shown and described, so that the teeth of the one shaft may be cleared by the cleaners of the next succeeding shaft.

Second, In combination with the rock shafts provided with teeth and cleaners, as described, I claim the stationary cleaners attached to the cross beam in rear of the rocker shafts for the purpose of clearing the teeth of the rear rock shaft, as herein shown and set forth.

Third, I claim the cleaners constructed as herein described, that is to say, each cleaner being formed of one continuous piece of metal, which is bent to form the jaws between which the harrow tooth passes, the rear end of the cleaner forming the base by which the same is secured in its position.

Fourth, In combination with a harrow frame, having a vibratory or rocker frame provided with teeth and cleaners as above set forth, I claim the wheels mounted in said frame on a fixed axle, in the manner and for the purposes herein shown and set forth.

Fifth, In combination with a harrow constructed as set forth, I claim the hereinbefore described device for making furrows, that is to say, the rock shaft provided with shovel teeth and guide, arranged and operating as and for the purposes herein shown and specified.

57,167.—LANTERN.—Charles F. Moeller, Newark, N. J.

I claim a lantern having a hook, J, flanges, E, spring hook, S, slide, F, spring catch, w and hook, v, adjusted, combined, and arranged as herein specified.

57,168.—SHOE BRUSH.—C. F. F. Moeller and C. Latham Sholes, Milwaukee, Wis.

We claim the construction and arrangement of the scraper, in combination with the brush as herein described, consisting of the end, f, for cleaning the edge of the sole, the point, c, for cleaning between the sole and upper, the curvilinear edge from c to d, and attached to the side of the brush, for the purposes set forth.

57,169.—HOOP SKIRT.—E. L. Morris, Boston, Mass.

I claim, in combination with a hoop skirt, and so as to form part of the same, a cloth band so applied to the hoops, c, as to be detachable therefrom, the band being provided with pockets and with hoops or wires sliding loosely therein, and the ends of the band being made to lace or fasten together, all substantially as described.

57,170.—IRONING BOARD.—Miss S. A. Mort, Dayton, Ohio.

I claim the combination of the legs, G, the pressing block, H, neck, B, rest, d, shoulder, c, pin, l, fly, f, and rod, J, all arranged as and for the purpose herein set forth.

57,171.—DOUBLE REVOLVING PLOW.—John Mott, Danville, Cal.

I claim, First, The peculiar depressions in the front and back standards, a a b b, and extension of the arms, d d, of the front standard conforming to the mold boards, and the forked brace, c, for strengthening the plows, as described.

Second, The corked washer, f, and adjustable washers, m m, and lever, e e, and the peculiar shape of the outer ends of the set screws, l l, substantially as described and for the purposes set forth.

57,172.—MODE OF PREVENTING THE FREEZING UP OF GAS PIPES.—James H. Mulhall, Albany, N. Y.

I claim the employment at the junction of the lamp post gas pipe and of the service pipe at the bottom of the post, of a reservoir to hold alcohol or other fluid uncongealable at the lowest temperature of the climate, said reservoir to be formed, fitted, and arranged substantially as described.

57,173.—RAILROAD CAR ROOFS.—William H. Myers, New London, Conn. Antedated July 9, 1866.

I claim in roofs for railroad cars and other structures combining the strips, c, which form the bodies of such roofs with metallic bands and nosings, substantially as above set forth.

57,174.—DISINFECTING COMPOUND.—Henry Napier, Elizabeth, N. J.

I claim, First, The combination of phenic acid with alumina, for the purposes set forth.

Second, The combination of a metallic perchloride with alumina, for the purposes set forth.

Third, The combination of a solid sulphite with alumina, for the purposes set forth.

Fourth, A disinfecting compound, made as herein described.

57,175.—EXPLOSIVE COMPOUND. — Alfred Nobel, New York City.

I claim nitrine, or crystallizing nitro glycerin, produced by the mixture of glycerin, sulphuric acid, and nitric acid, free or nearly free from hyponitric acid, for the purpose specified.

57,176.—CARPENTER'S BENCH HOOK.—Lewis F. Noe, New York City. Antedated Aug. 2, 1866.

I claim a reversible bench hook, constructed and operating substantially as herein set forth.

57,177.—LOOM FOR WEAVING CLOTH WITH SWELLS OR GORES.—Morris Opper, New York City.

I claim the pressure rollers operated by the lay of the loom, substantially as described, and controlled by the jacquard or equivalent therefor, in combination with the take up roller, substantially as and for the purpose specified.

57,178.—MACHINE FOR CONVERTING RECIPROCATING INTO ROTARY MOTION.—John B. Page, Chicago, Ill.

I claim the arrangement and combination of the racks, D, supports, F, with the lever, k, and pinion, H, substantially as described and set forth.

57,179.—CARRIAGE POLE.—Henry W. Painter, New Haven, Conn.

I claim the combination of the bar, B, with the pole, inserted in the manner and for the purpose specified.

57,180.—HEAD BLOCK FOR SAW MILL.—John W. Parsons, Owenton, Ky.

I claim, First, The setting mechanism, consisting of the double rack, D, and pawls, F f F' f', capable of simultaneous or separate action, substantially as set forth.

Second, I claim the cam, K, lever, L, rod, l, and tongue, M, adapted for the optional release of both or either head block, in the manner explained.

57,181.—BED BOTTOM.—E. M. Payne, Waverly, N. Y.

I claim the combination of the half elliptic springs, D, with the upper and lower frames, B and A, of the bed bottom, with rollers, C, pawls, F, ratchet wheel, E, and canvas, G", substantially as described and for the purpose set forth.

57,182.—MACHINE FOR WRITING AND PRINTING.—Abner Peeler, Webster City, Iowa.

I claim, First, Printing reading matter by means of a self-adjusting type plate having a compound movement, and a lever press, substantially as described.

Second, The lever, C, and pin, E, combined with the hinged block, F, when used for the purpose specified.

Third, The finger plates, R and S, with their several adjuncts as described, or their equivalents, for the purpose of moving and adjusting the type plate.

Fourth, The hinged blocks, F and I, constructed and operating substantially as and for the purposes set forth.

Fifth, The sliding beam, O, ratchet and pawl, N, and paper holder, P, constructed, combined, arranged, and operating substantially as and for the purposes specified.

Sixth, The entire machine constructed, combined, and arranged substantially as described.

57,183.—DERRICK FOR RAISING SUNKEN VESSELS.—Sherman Petrie, Buffalo, N. Y.

I claim the double set of lifting tackle, C C, and chains, G G', arranged, combined, and operating substantially as described, by which the sunken vessel may be raised, and at the same time the derrick vessels maintained in their upright positions, as set forth.

57,184.—ALLOY.—Frederick Pfeiffer, Philadelphia, Pa.

I claim the aforesaid new and improved alloy metal, plated or covered, and particularly the addition of bismuth, antimony, and tin, to lead and copper, in the order, proportions, and for reasons, as already stated, using for that purpose the aforesaid metals, or any other substantially the same, and which will produce the intended effect.

57,185.—COMBINED SEEDER AND CULTIVATOR.—Thomas J. Price, Auburn, Ky.

I claim, First, The combined cultivator and seed coverer, constructed and arranged substantially as herein shown and described, that is to say, having adjustable, interchangeable teeth, capable of being shifted and secured in different parts of the frame, as and for the purpose set forth.

Second, In combination with the cultivator with adjustable and interchangeable teeth, as described, I claim the spiked roller when constructed and arranged for operation as and for the purposes herein set forth.

Third, The combination in a cultivator or seed coverer, constructed and arranged as herein described of the roller with a stationary spiked cross bar to clean the roller and prevent its becoming clogged, substantially as herein set forth.

57,186.—PIANO.—Richard Raven, New York City.

I claim introducing beneath the principal sounding board of a piano a drum or sounding chest, composed of one or more sounding boards, on which the principal sounding board is supported, with their edges secured permanently to the case of the instrument, substantially as shown.

57,187. — HEATING FURNACE. — C. R. Rand, Dubuque, Iowa.

I claim, First, The open furnace, provided with the air passage, G, in combination with the lateral air flue, D, located in the upper part of the fireplace, as shown and described.

Second, In combination with the air passages, G and D, I claim the hollow or tubular barred gates, U, arranged and operating as set forth.

Third, In combination with the open furnace I claim the air chamber, R, and the vertical flues, P and P', arranged as shown and described.

Fourth, The arrangement of the smoke flues, I I" H and H', as set forth.

Fifth, The adjustable water vessel, K, located within the hot-air chamber, as shown and described.

Sixth, The dividing chamber or passage, F, when provided with the valves, i, and deflecting plates, K, arranged as herein set forth.

57,188.—STEAM PUMP.—Louis C. Rodier, Springfield, Mass.

I claim, First, The arrangement in each end of a steam cylinder of the valve, b, with a steam reservoir, L, and post, f, so as to be operated by the piston to admit steam to the main valve chest, substantially in the manner and for the purpose set forth.

Second, The construction of the stem of the valve, b, at each end of the cylinder, in such a manner that it shall be moved reversing the main valve before the piston reaches the end of the cylinder so as to cushion the piston, as set forth.

Third, The arrangement of the ports, h and s, respectively in the main valve and its seat so as to communicate with the exhaust port, and the valve chest, substantially as set forth.

Fourth, The arrangement of the water valves hung on trunnions in the plugs, substantially as set forth.

Fifth, The construction of the upper plug divided into three parts by means of partitions communicating with either end of the cylinder and with the delivery pipe and air chamber, as shown and described.

Sixth, The arrangement of the yoke, n, operating substantially as set forth.

57,189.—PISTON-PACKING RING.—John B. Root, New York City. Antedated August 8, 1866.

I claim a packing ring beveled at its outer edges, as shown at e e, and so on, as described, and fitted to the piston and cylinder, to operate as herein set forth.

57,190.—TRUNK ENGINE.—John B. Root, New York City.

I claim the arrangement of the packing rings within the trunk in combination with the cylindrical guides, F F, attached to the cylinder, substantially as and for the purpose herein specified.

57,191.—PLANING MACHINE.—James J. Russ, Worcester, Mass.

I claim the pressure foot for planing machines, arranged and constructed to operate substantially as described.

57,192.—MANUFACTURE OF PAPER.—William A. Russell, Lawrence, Mass.

I claim the improved fabric or manufacture of paper as composed of a coarser, stronger, and more opaque material (such as Manilla hemp or Manilla rope, Sisal grass, jute or gunny bagging), and two superficial or finishing layers of a finer and whiter material (such as linen or cotton or a mixture of both), applied, arranged, and combined together, under circumstances and in manner as hereinbefore explained.

57,193.—HORSE HAY FORK.—Andrew V. Ryder, Germano, Ohio.

First, I claim the above-described arrangement of the tines, A and D, with the tubular head, B, arms, C, and rope, E, substantially in the manner and for the purposes set forth.

Second, I also claim the arrangement of the locking lever, G, with the tumbler, H, and dog, I, substantially as described.

57,194.—DESULPHURIZING ORE.—Van Buren Ryerson, New York City.

I claim the process, substantially as described, of subjecting ores which have been desulphurized and their base metals oxidized, to the action of the gases evolved from the process of desulphurizing another charge of such ores in the presence of atmospheric air, and mingled with binoxide of nitrogen and jets of steam, for the purpose specified.

57,195.—HAND-SCREW CLAMP.—Hermann Schmidt, New York City.

I claim the movable nuts, c c, in combination with the screw, B B', and jaws, A A', of a carpenter's clamp, constructed and operating substantially as and for the purpose described.

57,196.—LUBRICATOR.—Charles Schott, Nashville, Tenn.

I claim the arrangement of the ratchet wheel, c, carrying the dippers, the pawl, e, lever, B, and cam, I, in relation to the journal box, in the manner and for the purpose herein set forth.

57,197.—MEAT CUTTER FOR SAUSAGES.—Jean Segondy, St. Louis, Mo. Antedated July 31, 1866.

I claim the sliding head blocks, G, and the slide, I, when constructed and employed as and for the purpose set forth.

57,198.—CAR SEAT AND COUCH.—Thomas Sharp, Carlisle, Pa.

First, I claim providing means, substantially as described, whereby hinged backs of car seats are elevated after they are swung over to a horizontal position, and after being thus elevated are retained in position, either permanently or with only a slight freedom to move up and down, all for the purpose set forth.

Second, The arrangement of the suspension rods, g g, and springs, h, in combination with the hinged vertically-adjustable backs of car seats, substantially as and for the purposes described.

Third, The united or folding cushions, D, in combination with supports, a, formed on the seat frames beneath the bottoms of the seats, D', whereby the cushions, D, when not in use are sustained out of the way of the foot rests, C, substantially as described.

Fourth, The combination of the cushions, D or D', springs, S S, and slats, E E, substantially as and for the purposes set forth.

57,199.—HORSE HAY FORK.—E. Shorkley, Lewisburg, Pa.

I claim the case or sheath, A, provided with an arm or projection, B, at its upper end in connection with the hooks, F F, connected with the rod, c, and case or sheath, A, and operated through the medium of the lever, D, or its equivalent, substantially as and for the purpose set forth.

I also claim the particular arrangement of the hooks, F F, links, g g, and arms, h h, to operate in the manner substantially as and for the purpose specified.

57,200.—PLOW.—J. B. Skinner, Rockford, Ill.

First, I claim swiveling the colter or cutter for plows or cultivators in sockets or brackets so attached to the beam as will permit of the colter coming to lateral and vertical adjustment, substantially as and for the purpose set forth.

Second, Giving the swiveled colter or cutter, both a vertical and horizontal adjustment, substantially in the manner and for the purpose set forth.

57,201.—BRAIDING MACHINE.—Thomas J. Sloan, New York City.

I claim the second guide on the carrier bar, and the second guide on the sliding weight, in combination with the first guide on the carrier bar and weight heretofore used, substantially as and for the purpose described.

57,202.—BUTTON HOLE.—Charles D. Smith, Washington, D. C.

I claim a button hole having a continuous metallic binding, substantially as and for the purpose specified.

57,203.—Mode for Curing Pork.—Morris H. Smith, Brooklyn, N. Y. Antedated Aug, 8, 1866.

I claim the suspending of hams and shoulders, during the process of curing, with the but forward and the shank down in such a way that the brine dripping from one ham will fall on that beneath, as herein described, using for that purpose parallel bars, or any other means substantially the same, and which will produce the intended effect.

57,204.—Clothes' Drier.—Theodore F. Snover, Menasha, Wis.

I claim the combination of the plate, B, with its shouldered collar, D, the slotted plate, F, and bars, H, with studs, a, constructed as described and operating in the manner and for the purpose specified.

57,205.—Saw-toothing Machine.—Adam Sawden, Cincinnati, Ohio.

I claim the arrangement of shearing jaws, J J, and toothing-jaws, K K', in the described combination with the adjustable traveling gages, N, as and for the purposes set forth.

57,206.—Suspended.

57,207.—Potato and Drill Machine.—Silas L. Spencer, Hopewell Cross Roads, Md.

I claim the arrangement of the double hopper, J K, and strike, k, in combination with the delivering oxes, e e e, in the opening joints, i i i, endless belt, c c, rollers, C D, driving mechanism, E F, and frame, A, constructed and operating in the manner herein described for the purpose specified.

57,208.—Car Coupling.—G. D. Spooner and J. F. F. Hale, Rutland, Vt.

We claim the double stop, c, in combination with the horizontal partition, a, and coupling pin, b, of a car coupling, constructed and operating substantially as and for the purpose set forth.

57,209.—Table.—E. L. Staples, Nashville, Tenn.

First, The inclined molding board or kneading trough, D, in the top of a table, substantially as described.

Second, The combination of the sliding top, E, with its attached leg, and the inclined molding board on the top of a table, substantially as and for the purpose herein specified and set forth.

57,210.—Vulcanizing Flask for Dentists.—Eli T. Star, Philadelphia, Pa.

First, The combination of the two rings, A B, and interchangeable plates, s c, substantially as herein set forth for the purpose specified.

Second, The holes, f, beveled or counter-sunk at their outer ends, in combination with the covering plate, A, and a ring A or B, substantially as herein set forth for the purpose specified.

Third, The slotted lugs, g, recessed as described of the plate, s, in combination with the T bolts, j, nuts, r, and perforated lugs, k, of the plate, e, substantially as herein set forth for the purpose specified.

57,211.—Method of Elevating Water in Railroad Tanks.—Charles L. Stevens, Galesburg, Ill.

First, The rail platform, A, operating on a series of compound levers, c c c, and so connected with the rods, a a a, of the platform, and the shafts, E E E, as to impart, by means of the passage of a train of cars, sufficient motion thereto to operate one, two or three pumps, as may be desired, substantially in the manner and for the purpose as herein set forth.

Second, The rods, a a a, of the platform constructed with the friction rollers, e e e, on their ends and operating in slots, D, in the bed sills, B, under and against the rails as to give the proper direction and position to the platform in its elevation and depression, substantially in the manner and for the purpose as herein set forth.

Third, I claim depressing the rail platform and retaining it in that position by means of the lever, n, on the shaft, being locked into the upright spring plate, f, by the brakesman or man in attendance, substantially in the manner and for the purpose as specified.

Fourth, The fulcrum lever, h'', vertical rod and lever connecting therewith in combination with the shaft, E, substantially in the manner and for the purpose as herein specified.

Fifth, The weights, F F, and levers, f f, on shafts as arranged to elevate the rail platform on every succeeding depression of it by the cars of the train when passing thereon, substantially in the manner and for the purpose specified.

57,212.—Preserve Can.—Charles F. Stilz and J. C. Knoepke, Pennsylvania City, Pa.

First, We claim the combination of the tin can, A, the conical flanged neck, d, the cast iron stopper, E, gum ring, G, ears, K K', and spring bar, M, when arranged and operating substantially as described.

We claim the combination of the tin can, A, the conical flanged neck, d, the cast iron stopper, E, gum ring, G, loops, o o, cross-bar, N, and thumb screw, p, when arranged and operating substantially as described.

57,213.—Grater for Carrot and Other Vegetables.—Emos Stimson, Montpelier, Vt. Antedated July 30, 1866.

I claim a rotary grater with an open end attached to the end of an arbor operated by gears and crank in connection with the frame and rest as described and for the purpose above specified.

57,214.—Saddle.—H. Stockton, Newport, R. I., and W. S. Smoot, Washington, D. C.

First, We claim a saddle tree highly arched underneath, flat on top, opened between the bars and covered and bound, substantially as herein described.

Second, In combination with a saddle such as described, and without padding, a saddle cloth having a leather re-enforce, c, substantially as and for the purpose set forth.

Third, The combination with the stirrup loop of a hinged locking and unlocking lever, x x, operated without a spring, substantially as set forth.

57,215.—Lard Lamp.—Timothy Terrel, Spring Hill, Ohio.

I claim a lamp for burning lard and other similar substances, having a cylindrical body or fountain, A, with a toothed wheel, E, fitted concentrically within it, on a horizontal shaft, D, to act upon the wick, F, substantially as herein shown and described.

57,216.—Plow Clearing Attachment.—Timothy Terrel, Spring Hill, Ohio.

I claim the sliding rod, D, applied to a plow, substantially in the manner as and for the purpose herein set forth.

57,217.—Process for Making Extracts.—N. Spencer Thomas, Painted Post, N. Y.

I claim the within described process of concentrating extracts or other substances by the action of jets of air injected at or through the bottom of the vacuum pan in which the evaporation of said substance is to be effected, substantially as set forth.

57,218.—Apparatus for Extracting Tanning Matter from Bark.—N. Spencer Thomas, Painted Post, N. Y.

I claim, First, The apparatus herein described consisting of a tank, A, movable top, B, hinges a', catch, h, tie rods, a, pipes, b f, rose, c, bottom, C, perforated false bottom, d, rim, e, and radiating channels, g, when constructed and arranged in the manner and for the purposes specified.

Second, I further claim the process herein described of extracting bark or other materials by the continuous application of steam and intermittent application of water in an apparatus of the construction specified.

57,219.—Composition for Removing Incrustations from Boilers.—N. Spencer Thomas, Painted Post, N. Y.

I claim a compound for removing and preventing incrustations in steam boilers, made of the ingredients set forth and mixed together or applied in about the proportions specified.

57,220.—Faucet.—Thomas J. Thorn, Skaneateles, N. Y. and Jonathan Dennis, Jr., Washington, D. C.

We claim, a faucet stock or tube fitted for insertion in a cask, tank, boiler or other vessel, with two holes through it, and a valve at its inner end, worked by a rod or screw passing through one of the holes, and independent of the hole through which the water or liquor is drawn or flows.

And in combination with the above claimed faucet we claim a strainer arranged beyond the valve of the faucet.

And in combination with the strainer arranged beyond the valve, we claim an arm arranged to sweep or clear the strainer, substantially as described.

We also claim the extension of the valve rod through the strainer to work the arm that sweeps the strainer.

57,221.—Beer Cooler.—Matthew Tschirge and Louis Kammuller, Dubuque, Iowa.

We claim cooling beer on its way from the "cool beds" to the fermenting tun, by causing the beer to flow in an unbroken sheet over both sides of a series of cold water pipes, arranged one above another, and provided with thin blades, g, substantially as described.

57,222.—Cultivator.—J. W. Tyson, Lower Providence, Pa.

I claim the mounted frame, provided with laterally adjustable and longitudinally slotted bars, E, as and for the purpose set forth.

57,223.—Spring Mattress.—Charles Van Dyeck, Nashville, Tenn.

I claim a spring mattress, constructed with a frame, A, diaphragm, b, and spiral springs, a a, enclosed in a casing, d, the several parts being constructed, secured, and arranged for use, substantially as set forth.

57,224.—Sorghum Evaporator.—P. C. Van Slyke, Bloomfield, Ind.

I claim, First, In evaporators connecting their divisions by pipes running from one to the other, below their bottoms, substantially as described.

Second, I also claim perforating the connecting pipes at their lowest points, substantially as described.

57,225.—Apparatus for Augmenting Sound in Piano Fortes.—Maurice Vergnes, New York City.

I claim clamping two sounding boards upon the flange of the frame, at a distance within two inches of each other, to render them solid with the case, and to admit of tightening them when the case shrinks.

Second, The use of the strips, D I and G, to prevent a jar of the board on the frame.

Third, Using in the sounding-board the proportion as to thickness of 2 of the upper to 3 of the lower one, which is perforated to equalize them in strength.

57,226.—Hand Loom.—W. B. Walker and N. D. Hartley, Salem, Iowa.

We claim the driver strap, b, described and shown in Fig. 5, made substantially as described, so as to be stiff except in the part that is pivoted to and that embraces the head of the shaft, for the purpose above set forth.

Second, We also claim in combination the picker staff, B, the said driving strap, b q', made as shown, and the spring, h, for holding the staff stationary, while the strap is limbered up, substantially as described.

Third, We also claim the depressors, c c, having rounded shoulders, b', their bottoms being inclined or beveled in two directions, and having planes formed thereon, corresponding in number with the number of treadles in the loom, substantially as described.

Fourth, We also claim the reciprocating rod, g, attached to the lay, whose hooked end engages with holes in the treadle shaft to hold the shaft stationary when the lay is still, substantially as shown.

Fifth, We also claim making the pulley, I, in sections, so that it can be removed from the shaft, in order to change from one-sized pulley to another, substantially as described.

Sixth, We also claim the stop, r, connected with the rake-up rod, E, which gives it a vibrating movement for the purpose of acting as a stop to the pins, R, and so aiding in making the shaft move around a regulated distance at each reciprocation of the lay, substantially as set forth.

Seventh, We also claim the combination of the treadle-shaft, having movable pins, R, a ratchet, K, and a loose pulley and pawl, constructed as shown, with the adjustable bar, S, which operates it from the lay, whereby a loom can be operated with three leaves of treadles, and with other odd as well as even numbers, by changing the position of the pins adjusting the hight of the end of the bar, S, on the lay, changing the number of ratchet teeth, and changing the size of the pulley, substantially as described.

57,227.—Hay Press.—Edgar A. Ward, Gallipolis, Ohio.

I claim the shaft, D, with the cube, a, attached, and the spiral sectional drum, E, and in combination with the lever, L, ratchet, R, and ropes or chains, m and n, the whole operating as described and for the purposes set forth.

57,228.—Steam Engine.—George J. Washburn, Worcester, Mass.

I claim the cylinder, A, constructed as described, with a diaphragm or partition at its central portion, traversed by the piston-rod, and combined with the pistons as specified.

The combination of the cylinders, A B, constructed and operating as described.

57,229.—Spring Bed Bottom.—D. P. Webster, Upper Gilmanton, N. H.

I claim the single wire clamp, e, with its hooks, f, catching under the topical of the spring, and holding it up against the slat, substantially as described for the purpose specified.

57,230.—Machine for Cutting Rasps.—Alfred Weed, Boston, Mass.

I claim producing the teeth of rasps in arcs of parallel circles, by giving to the tool and the rasp blank movements substantially as described.

Also, the means for giving lateral vibration to the cutter, consisting of the lever, f, when pivoted to its rocker-shaft, i, the lever g, and the cam, n, and spring, s, combined to operate substantially as described.

Also, the compound compensating jaw in lever, q, formed by the two cylinders, t and u, slotted and arranged substantially as specified.

Also, the means for intermittently feeding the blanks, consisting of cam, a', rocker, b, the spurs on ratchet, p', and latch, k', arranged to operate the ratchet, r', and thereby to move the blank carriage, k.

And the combination with the presser holder of the rod, p', weight, u', or its equivalent spring and treadle, o', arranged and operating together as described.

57,231.—Method of Driving Fence Posts.—Geo. E. West, Indianapolis, Ind.

I claim raising and dropping the weight, C, by means of the cam, G, pins, s s s, and wheels, H and I, when mounted on wheels and made portable, and arranged and operated in the manner and for the purpose substantially as set forth.

57,232.—Machine for Pouncing Hats.—Sidney S. Wheeler and Daniel B. Manley, Danbury, Ct.

First, The pouncing cylinder, L, or its equivalent, adapted to move at a comparatively high speed, in combination with the hat block, a, adapted to move at a comparatively low speed, operating substantially as described, whether the motion be rotary or otherwise.

Second, We also claim carrying a rotating, cutting cylinder, or wheel, for pouncing hats in a vibrating frame; so that such cutting cylinder or wheel can act both on the crown and sides of hat bodies, which are stationary or are moving forward in a straight line, substantially as above shown.

Third, We also claim giving an advancing motion, and at the same time a rotary motion, to a hat-block, upon which hat-bodies are placed to undergo the operation of pouncing, substantially as and for the purpose above set forth.

Fourth, We also claim, in combination in machines for pouncing hat bodies, the carriage, b, the hat-block, a, so mounted as to be capable of rotary motion, the worm, o, cog-wheel, P, and rack, V, for moving the carriage forward, and a suitable spring for driving the carriage back when it is released from its driving-wheel, P, substantially as above shown.

Fifth, We also claim, in combination, a conical emery rotating surface, h, for pouncing the brims of hat-bodies, and a conical supporting surface, 3, to hold the brim up to the cutting surface, substantially as shown.

Sixth, We also claim, in combination, a conical rotating cutting surface, h, for pouncing the brims of hat-bodies, and conical feeding rolls with elastic surface, g g, for feeding the brim to the cutting or pouncing surface, substantially as shown.

57,233.—Fabric for Tubing, etc.—Thomas R. White and William G. Bedford, Philadelphia, Pa.

We claim a fabric composed of threads and wires, interwoven and coated with a waterproof material, substantially as described

57,234.—Shoe Nails.—A. A. Wilcox, Fair Haven, Ct.

I claim a shoe-nail, provided with a collar, a, or its equivalent, substantially in the manner herein described, as a new article of manufacture.

57,235.—Horse Shoes.—Albert S. Wilkinson, Pawtucket, R. I.

I claim the continuous clip, c, in combination with the bar, A, and continuous calk, d, whether the latter is situated on the inner or outer edge of the shoe, all constructed as illustrated and described in Figs. 1 and 2.

57,236.—Calk for Horse Shoes.—Albert S. Wilkinson, Pawtucket, R. I.

I claim an adjustable calk in B' B b, constructed and fastened substantially in the manner and for the purpose specified.

57,237.—Device for Holding Eavestroughs while Soldering Them.—E. Wilkinson, Jr., Mansfield, Ohio.

I claim the frame, F, and flanges, y, in combination with the concave bed, B, having clamps, C C, all constructed and arranged together, substantially as and for the purpose specified.

57,238.—Manufacture of Vinegar.—Alexander C. Wills and Hugh Sharp, Marlton, N. J.

We claim utilizing the refuse of apple-presses and cider-stills, by treating these substantially as described, to form vinegar.

57,239.—Shutter Fastening.—Jacob D. Winslow Wilmington, Del.

I claim the notched lever, B, hung upon the bar, A, in combination with the staple or equivalent device, projecting downward from the lower edge of the shutter, E, all being arranged and operating as set forth.

57,240.—Door Spring.—Alvah Wiswall, New York City.

I claim the V-shaped spring, D, attached to the door or gate, in combination with the roller, d, attached to a plate, c, projecting from the door-frame, or from the part, a, of the hinge attached thereto, and all having such a relative position with each other, to operate in the manner substantially as and for the purpose set forth.

57,241.—Door Bolt.—George M. Wood, Decatur, Ill.

I claim the semicircular hollow bolt, A, provided with a longitudinal slot, a, in its inner side, and a hole for a knob on its outer side, in combination with the plate, B, having a longitudinal slot, b, in it for the screws, D, to pass through and secure the plate and bolt to the door or other article to which the bolt is to be applied substantially as shown and described.

57,242.—Machine for Tilling the Soil.—Sylvester Woodbridge, Benicia, Cal.

First, I claim the tilling frame, B', tiller shaft, G, and guide plate c, with or without intermediate gearing, in combination with the crank on the tiller shaft, G, and crank shaft, F, and connecting rods, H, substantially as and for the purpose set forth.

Second, I claim the truck frame, A, and driving wheel or cylinder, C, spur gear, D (whether internal or external), and pinion, E, with or without intermediate gearing, in combination with the means hereinbefore described and set forth, of operating agricultural implements by cranks, rods, guide plates, or shafts, substantially as set forth.

57,243.—Packing for Piston Boilers.—William P. Woodruff, New York City.

I claim a steam packing made of a gasket, a, braided or otherwise produced, by hemp or other suitable material, and protected by a flexible covering, B, in combination with a strip of tin foil fastened to its inner circumference by one or more strips of brass, substantially as and for the purpose set forth.

57,244.—Culinary Steamer for Boilers.—Fred. W. Bacon (assignor to himself and D. A. Strong), Washington, D. C.

I claim the construction of steamers for culinary purposes, provided with the perforated diagram, D, or its equivalent, the concave center, c, or its equivalent, and the conical bottom, B, with the tubes, t t t, or their equivalents, made substantially in the manner and for the purposes set forth.

57,245.—Method of Using Explosive Liquids for the Production of Light and Heat.—William Beschke (assignor to himself, P. H. Vander Weyde, and L. Straus), Philadelphia, Pa.

I claim filling up the whole or a part of the interior of the lamps, bottles, cans, barrels, tanks, reservoirs, etc. (the former to burn, and the latter to retain and to transport gasoline or other explosive liquid), with saw-dust, cotton, asbestos, beads, gravel, shot, etc., and with wire gauze or perforated thin plate, for the purposes specified.

57,246.—Drop-handle Urn Cocks.—Henry Bailey and Edwin L. Bailey (assignors to Henry Bailey), Philadelphia, Pa.

We claim the plug, B, having a rightangular groove, D D', operating with the fixed pin, C, or its equivalent, on the face of the tapering hole of the body, A, provided with nut, E, and washer, F, substantially as described, for the purpose specified.

57,247.—Shoe-lacing Fastening.—George Butterfield (assignor to David Robinson, Jr., Dorchester Mass.), Boston, Mass. Antedated August 1, 1866.

I claim the lacing plate, A, provided with an eye, b, having an angular slot, a, extending from it, substantially as and for the purpose described.

I also claim the combination of such plate, A, with a series of lacing or eyelet holes, c, the plate being arranged with respect to the holes, c, and to secure the lacing, d, substantially as shown and described.

57,248.—Whiffletree.—Philip B. Curtis (assignor to himself and Albert P. Sawyer), Amesbury, Mass.

I claim the arrangement and combination of the brace, attachment straps, B C, and the bolt, z, and its holders, e e, with the whiffletree, A, and its end loops, b b, the whole being substantially as specified.

I also claim the combination of the safety spring with the whiffletree, the bolts, z, its holders, and the attachment straps, B C, applied to such whiffletree, as specified.

57,249.—Slide Bolt.—John Decker (assignor to himself and Charles W. Wardwell, Brooklyn, N. Y.), Sparta, N. Y.

I claim the bolt, B, fitted in a case, A, and provided with a pro

jection, d, at its rear side, and with a shoulder or stop, e, at its outer side, in combination with the tumblers, D, notched as shown, to receive the projection, d, and the oblong slot, b, in the case, A, all arranged to operate substantially in the manner as and for the purpose set forth.

57,250.—CARPENTER'S VISE. — Orlando V. Flora (assignor to himself and John G. Moore), Madison, Ind.

I claim the combination of the fixed catch, B, and the ratch bar, G, movable up and down, to clear and engage with the catch, substantially as and for the purpose herein specified.

57,251.—MACHINE FOR FLATTENING AND PUNCHING UMBRELLA RIBS.—Jacob Fox (assignor to Carr & Company, Philadelphia, Pa.), Minersville, Pa. Antedated August 1, 1866.

First, I claim the slides, P, with their flattening, punching, and indenting dies, arranged in line and parallel with each other, in combination with similarly arranged counter dies, the whole operating as set forth, for the purpose specified.

Second, The combination of the above with shaft G, and notched disks, H, the whole being arranged and operating substantially as and for the purpose herein set forth.

Third, The combination of the slides, D, and their punching and flattening dies, I, with the holding rod, d, and its spring, c.

57,252.—MODE OF UTILIZING TINNER'S WASTE.—Charles Gotey and Aug'te Guillemin (assignors to themselves and Charles Fox, and Joseph Oppenheimer), Cincinnati, Ohio.

We claim, First, The process of removing tin from iron, substantially as set forth.

Second, The furnace, substantially as described and for the purpose set forth.

57,253.—LADY'S FAN.—Samuel A. Grant (assignor to Burlington Manufacturing Company), Burlington, N. J.

I claim as a new article of manufacture, a fan having its body and handle made in one piece, and of one and the same veneer or sheet of wood, substantially as herein described, and for the purpose specified.

57,254.—APPARATUS FOR MEASURING AND FITTING DRESSES.—P. A. La Ment (assignor to himself and Eliza La Ment), New York City.

I claim a skeleton frame or "shape," consisting of a series of bands, B and C, when so arranged and constructed together that they can be separately and severally adjusted, substantially in the manner described, and for the purpose specified.

57,255.—SWINGING CHAIR.—Ernst Marx (assignor to himself, Hermann Dittrich, and Julius Keer), New York City.

I claim the leg, E, and jointed and curved arm, D, supporting the seat, and operating substantially as described.

57,256.—INSTRUMENT FOR REMOVING EFFERVESCING FLUIDS FROM BOTTLES.—Whitney W. Meglone (assignor to himself and L. A. Stedman), Nashville, Tenn.

First, I claim the fluid-extracting instrument, a c b, constructed and operating in the manner as shown and described.

Second, The combination of the tube or instrument, a c b, with the cork, D, or its equivalent, and bottle, A, operating in the manner set forth.

Third, The combination of the several parts just named, with the auxiliary tube, i, operating substantially as set forth.

57,257.—PIANO. — William Nordhoff (assignor to William Knalee & Company), Baltimore, Md.

I claim the plate, B, secured to the wrest plank, c, in combination with the frame, A, when said parts are constructed and arranged to operate substantially as and for the purpose herein set forth.

57,258.—MACHINE FOR PRIMING METALLIC CARTRIDGES.—Timothy J. Powers (assignor to J. P. Fitch and J. R. Van Betchen), New York City. Antedated July 31, 1866.

First, In a machine for depositing the fulminate priming in cartridge shells, I claim a feeder which descends into a box, vessel, or reservoir containing the priming, in a fluid or semi-fluid state, picks up the requisite quantity of priming therefrom, and again descends into or over the cartridge shell, to deposit the priming therein, substantially as herein described.

Second, I claim suddenly arresting the feeder in its descent over or into the cartridge shell, substantially as herein specified, for the purpose of insuring the complete discharge of the priming therefrom.

Third, I claim the combination of a feeder, a priming reservoir, and a cartridge shell carrier, operating substantially as herein specified.

Fourth, Commencing the rotary or spinning motion of the shell about the axis before the deposit of the priming therein, substantially as and for the purpose herein described.

57,259.—CORN PLANTER.—Henry Reed and William P. Pennewell (assignors to themselves and Walter Caldwell), Middleton, Mo.

We claim the sheet-iron teeth or wires, x, when attached to the pieces, A and A', for the purpose of scattering the seed.

57,260.—BUTTON.—E. A. Robinson (assignor to the United States Button Company), Waterbury, Conn.

I claim a button having the loop screwed to and in the mold, by means of a metallic plate or blank, D, having a ragged edge or lip, E, substantially in the manner described.

57,261.—MACHINE FOR MAKING SHEET METAL PANS.—M. S. Sager (assignor to S. B. Yeoman), Washington, Ohio.

I claim the combination of the sliding mold block, M, and stationary bed plate, B, having lever arms, or binders, H, hinged to the sides, and secondary benders or lever arms, K, hinged to the benders, H, for the purpose of bending or laying over the projecting corner pieces of the metal sheet, arranged and operated substantially as described.

57,262.—CARPET-BAG FRAME. — Cornelius and Zachariah Walsh (assignors to Cornelius Walsh), Newark, N. J.

I claim the combination of the jaws, A, with the interior frames, consisting of the wooden pieces, C C, metallic hinge pieces, I I, and plates, D, the latter secured by tenons, F F, to the jaws, and both jaws and inner frames pivoted upon the bolt, B, the whole constructed as described and represented.

57,263.—CLAMP FOR CLOTHES LINE.—William Winter (assignor to himself, Isaac Townsend, and Theodore H. Beacher), Philadelphia, Pa.

I claim a clothes line spring-clamp, consisting of a hollow cylinder, open at each end, divided along one of its sides, and having its inner edges beveled or rounded off, all as set forth and described.

57,264.—MANUFACTURE OF PIGMENT.—John Dale, Manchester, Eng.

I claim, First, The production of a pigment, by decomposing the known pigment, satin white, by means of chloride of barium, or strontium, so as to replace, or partially replace, sulphate of lime, by sulphate of barium or strontium.

Second, The production of a pigment, by using caustic baryta or strontia instead of, or partly instead of, the lime ordinarily used in making "satin white."

57,265.—FILTER PRESS.—L. P. R. De Massy, Paris, France.

I claim a filter press having a corrugated surface, covered with wire cloth or gauze, against which the material from which the liquor is to be extracted is pressed, all substantially as and for the purpose described.

57,266.—REPEATING WATCH.—F. A. Lange, Glashutte, Saxony.

I claim, First, The pusher, G, in combination with the levers, H I, when constructed and operating substantially as described.

Second, The lever, I, in combination with the pusher, G, lever, H, pinion, E, and hammer, F, when constructed and operating in the manner substantially as set forth.

Third, The lever, H, when constructed with the projections, M and N, and the slot, S, substantially in the manner and for the purposes described.

Fourth, The lever, H, in combination with the lever, I, snail wheel, Q, quarter wheel, P, spring, W, and spring, R, when constructed and operating in the manner substantially as set forth.

Fifth, The lever, I, when constructed with the rack, K, the rack, L, the screw, T, and the spring, R, substantially in the manner and for the purpose described.

Sixth, Providing the stem or hour wheel, O, with twenty-four teeth, in the manner and for the purpose set forth.

Seventh, The hour wheel, O, in combination with the snail wheel, Q, quarter wheel, P, spring, Y, substantially as set forth.

Eighth, The hammer, F, when provided with the pawl, a, on the sliding stem, b, and constructed substantially as and for the purposes set forth.

Ninth, The hammer, F, in combination with the spring, X, as described.

Tenth, The wheels, D and E, in combination with the levers, G H and I, and the hammer, F, when constructed substantially as and for the purposes set forth.

Eleventh, The combination and arrangement of the pusher, G, levers, H and I, pinion, E, and wheels, D and C, the lever, Z, springs, R and W, hour wheel, O, snail wheel, Q, quarter wheel, P, spring, Y, with the hammer, F, and spring, X, substantially as and for the purpose set forth.

57,267.—APPARATUS FOR REEFING AND FURLING SAILS. — John Medhurst, Drummond Road, Bermondsey, Eng. Patented in England, March 4, 1866.

I claim the combined arrangement of the parts for reefing and furling a sail on a roller, c c, substantially as herein described.

57,268.—GAS METER.—Jean Theodore Schotte, Paris, France.

I claim, First, The apparatus for measuring gas, as herein shown and described, the same consisting of the following elements combined:

First, A drum with interior spiral partitions actuated by the gas, as herein shown and set forth.

Second, A valve, together with floats so arranged that it may open and close automatically.

Third, A regulating or discharge pipe for carrying off all water in excess of the proper level.

Second, In apparatus for measuring gas or other fluids, as specified, I claim the drum provided with interior spiral partitions, and actuated as herein shown and set forth.

57,269.—BREECH-LOADING FIRE-ARM.—Jasper H. Selwyn, Woodland Crag, Grasmere, Eng. Patented in England, October 12, 1865.

I claim the improvements in breech-loading fire-arms described and represented, that is to say, making the charge chamber of a conical or spheroido-conical figure, and making an annular groove or depression, the end of the cartridge box case is expanded on discharge, and retained so as to be started or drawn on the separation of the charge chamber from the barrel.

57,270.—HARMONIUM.—Carl Frederick Uhlig (assignor to George Frederick William Pabst), Chemnitz, Saxony.

I claim, First, The combination of flexible pipe, l, air movable chamber, B, and bellows, D, substantially in the manner represented and described.

Second, The combination of the air chamber, B, spring catch, m, arranged with lip, p, operating with the button, q, operating substantially as and for the purpose herein represented and described.

Third, The combination of the lever, F, rod, n, air chamber, B, provided with the spring catch, m, operating with lip, p, substantially in the manner and for the purpose represented and described.

Fourth, The combination and arrangement of the keys, a, with pins, a', lever, j, with pins, a2, air chamber, B, spring catch, m, lip, p, button, q, rod, n, lever, F, flexible pipe, l, bellows, D, constructed and operating substantially as described, for the purpose specified.

REISSUES.

2,332.—CIDER MILL.—Tobias J. Kindleberger, Eaton, Ohio.—Patented May 29, 1855.

I claim, First, A mill for grinding fruit, when constructed with three rollers, E G and H, the former of which is placed above the two latter, and so arranged, in relation to the sides of the hopper, that the fruit shall be broken by the longitudinal projections on the roller, E, and crushed against the breast piece, and then delivered upon the two crushing or grinding rollers between which the pomace passes, substantially as set forth.

Second, I claim, in a cider mill, having the three parallel rollers arranged as shown, in combination with the gearing arranged as described, and each of the grinding rollers revolving, by means of said gearing, at different velocities, as set forth.

Third, An adjustable breast piece, I, or its equivalent, by which the space between it and the upper crushing roller can be varied as desired.

Fourth, The scraper, h, arranged to operate in combination with the roller, E, substantially as set forth.

Fifth, Constructing the case, B, with concave or segmental metallic end pieces, B', as and for the purpose set forth.

Sixth, The use of a slatted grate, or its equivalent, to form the bottom of the tub or curb for the purpose of permitting the juice to drain through it, as set forth.

2,333.—PROCESS OF MAKING STEEL DIRECT FROM THE ORE.—George Hand Smith, Rochester, N. Y. Patented July 18, 1854. (Div. 1.)

I claim the process, substantially as herein described, for converting iron ores directly into steel by subjecting the ore, in the comminuted state, in connection with carbon, and with or without other flux, in a close oven, retort, or equivalent vessel, to a high degree of heat, and when converted, treating it in a reheating furnace to weld and ball the particles, and then hammering, rolling, or squeezing the balls to express the impurities and completethe welding, and compact the mass, as set forth.

I also claim, in the process of conversion, charging the comminuted ore and charcoal, or other carbonaceous substance, in the cementing oven, or other equivalent vessel, in alternate layers, substantially as and for the purpose specified.

2,334.—PROCESS OF MAKING STEEL DIRECT FROM THE ORE.—George Hand Smith, Rochester, N. Y. Patented July 18, 1854. (Div. 2.)

I claim the combination of the process of deoxidizing iron ore, and carbonizing the metallic particles, substantially such as herein described, with the process of melting in crucibles, substantially as and for the purpose described.

2,335.—MACHINE FOR PUNCHING AND EYELETING SHOES, ETC.—Elmer Townsand, Boston, Mass., assignee by mesne assignments of Jeremiah Keith. Patented Dec. 16, 1862.

I claim the combination, with eyelet setting or clinching tools, of a magazine in which the eyelets are loosely contained, but from which they emerge in upright position for the action of the setting tools.

Also, the combination with the eyelet magazine and eyelet clinching tools, of an interposed chute or conductor into which the upright eyelets emerge from the magazine, and by which each in succession is conveyed to position to be seized by the pin of one of the setting tools.

Also, a construction by which the eyelets in the magazine are agitated to cause them to assume positions in which they may emerge from the magazine.

Also, so constructing the lower end of the chute that each lowermost eyelet is detained in position until removed by the eyelet pin.

Also, combining with an automatic eyelet-presenting and setting mechanism, an automatic punching mechanism, operating in the same vertical line of operation with the clinching mechanism.

Also, combining with the mechanism which brings each eyelet into position before the clinching mechanism, a yielding pin, projecting from the anvil set, said pin receiving the eyelet and holding it in position for the descent of the upsetting tool, and yielding to the pressure of said upsetting tool, or the pin projecting therefrom.

2,336.—GRAIN BINDER.—Samuel Jacob Wallace, Carthage, Ill. Patented April 12, 1864.

I claim, First, A rack, c, in combination with arm, D, or its equivalent, for giving motion to the twister, substantially as described.

Second, The slotted wire holder on binding arm, D, formed of bent plates, b b, substantially as described.

Third, The spring fingers, e e, and spring, e', for carrying the strand to the twister, and releasing the strand, substantially as described.

Fourth, The spring fingers, e e, and spring, e', in combination with the slotted twister, F, operating substantially as described.

Fifth, The binding arm, D, provided with bent plates, b b, for holding and afterward catching the wire, in combination with the spring fingers, e e, for introducing the wire into the twister, substantially as described.

Sixth, The binding arm, D, provided with bent plates, b b, for holding and afterward catching the wire, in combination with the twister, F, and spring fingers, e e, for introducing the wire into the twister, substantially as described.

Seventh, The cutter, d, attached to the binding arm, D, and operating in combination with the twister, substantially as described.

Eighth, Effecting the several operations of carrying the strand around the sheaf, drawing up the slack of strand, forming the fastening, and severing the sheaf from the machine in the manner described, by the action of the lever, D', moved backward and forward, substantially as described.

Ninth, The binding arm, D, in combination with the levers, D1 D2, the two latter being pivoted to the arm, D, and to the draught frame of the harvester, on the grain side of the drive wheel, substantially as described.

Tenth, The levers, D1 D2, binding arm, D, and bottom plate, E, operating as described, and arranged independently of the grain platform, and so that the parts can be operated by the driver, substantially as set forth.

Eleventh, The reel, H, in combination with the ratchet, K, and levers, J and D2, the whole operating substantially in the manner and for the purpose specified.

Twelfth, The binding arm, D, in combination with the levers, D1 D2, reel, H, plate, E, spring fingers, e e, slotted twister, F, and rack, c, substantially as described.

2,337.—LANTERN.—William Westlake, James E. Cross, and James F. Dane, Chicago, Ill. (assignees of William Westlake). Patented July 18, 1865.

We claim, First, Constructing a lamp pot of a lantern, with edge or sides extending above the top of the pot and forming a flange, g, the side and flange forming one piece, so that the globe of the lantern will rest upon this flange, substantially in the manner described.

Second, The oil pot, e, having its sides, g, extended upward, and perforated for air passages, and provided with a flange, d, so as to form the base of a lantern, in one piece, and combined with a detachable globe guard, a, as set forth.

Third, The hole, h, with the sliding door, i, in combination with the recess, j, of the globe, for lighting the lamp, as herein described.

2,338.—RAILWAY JOURNAL BOX. — Ransom C. Wright, Meadville, Pa. Patented Nov. 14, 1865.

First, I claim the dovetailed projecting flanges, D' D', and dovetailed slides, E F, (the slide being composed of two pieces constructed and united as described), in combination with the rod, g, for securing the same, the parts being arranged for use, substantially in the manner and for the purpose set forth.

Second, The bearing, B, with its projection, b, and chambered recess, b, with or without the bar, m, substantially as and for the purpose set forth.

DESIGNS.

2,330.—COFFIN HANDLE.—S. D. Arnold, New Britain, Conn., assignor to P. & F. Corbin, same place, and J. C. Shurler & Co., Amsterdam, N. Y.

2,331 to 2,386 inclusive.—COFFIN TRIMMINGS.—S. D. Arnold, New Britain, Conn., assignor to P. & F. Corbin, same place, and J. C. Shurler & Co., Amsterdam, N. Y. Six cases.

2,387.—COFFIN HANDLE.—Alonzo B. Bailey, Middle Haddam, Conn.

2,388.—FENCE.—J. C. Gearhart, Jersey Shore, Pa.

2,389 to 2,426 inclusive.—CARPET PATTERN.—Henry G. Thompson, New York City, assignor to the Hartford Carpet Co., Hartford, Conn. Thirty-eight cases.

EXTENSIONS.

8,984.—POWER LOOM.—R. Reynolds, Stockport, N. Y. Letters Patent Dated June 1, 1852.

I claim, First, Connecting the rocker of each picker staff, made and operated substantially as specified, with the bed on which it rocks by means of an interposed strap of leather or other flexible substance, attached at the inner end to the bed, and at the outer end to the rocker, substantially as and for the purpose specified.

Second, Forcing the shuttle binders inward against the shuttle while boxing, by a gradually-increasing force, by means of arms on a rocker provided with a spring which is acted upon by a pin on the connecting rod of the lay, substantially as described.

Third, Securing the raw-hide pickers to the inner face of the staffs by means of a leather strap, or the equivalent thereof, embracing and binding the two together, substantially as described, to insure the firm union, to resist the rapid blows, and to prevent pieces of raw hide from breaking and flying, as set forth.

8,992.—PROCESS OF MANUFACTURING GUTTA-PERCHA.—John Rider, New York City. Letters Patent Dated June 1, 1852.

I claim the preparing of gutta-percha for vulcanizing by a preliminary separate heating of it to such a degree as to expel its volatile ingredients, herein specified; which I find can generally be effected at the high temperatures, from 285 to 430 degrees Fah., substantially as herein set forth.

I also claim the process herein described of vulcanizing gutta-percha by first heating it to a sufficiently high temperature to expel from it the volatile ingredients, herein specified, which it is believed can be accomplished between 285 and 430 degrees Fah., and then incorporating with it, substantially as herein specified, a hyposulphite, either alone or in combination with metallic sulphurets, or whiting, or magnesia, or with all of them together, and then subjecting the mixture to a temperature of from 285 to 320 degrees Fah., all the steps of the said process being performed substantially in the manner herein set forth. At the same time desiring it to be understood that I disclaim the vulcanizing of gutta-percha in all cases save when it has been prepared for the vulcanizing operation by the aforesaid preliminary heating.

9,015.—MANUFACTURE OF GRANULAR FUEL FROM BRUSH WOOD AND TWIGS.—Reuben Daniels, Woodstock, Vt. Letters Patent Dated June 15, 1852.

I claim the granular fuel produced from brush wood and twigs by cutting the same into lengths about equal to its average diameter, as herein described, as a new manufacture.

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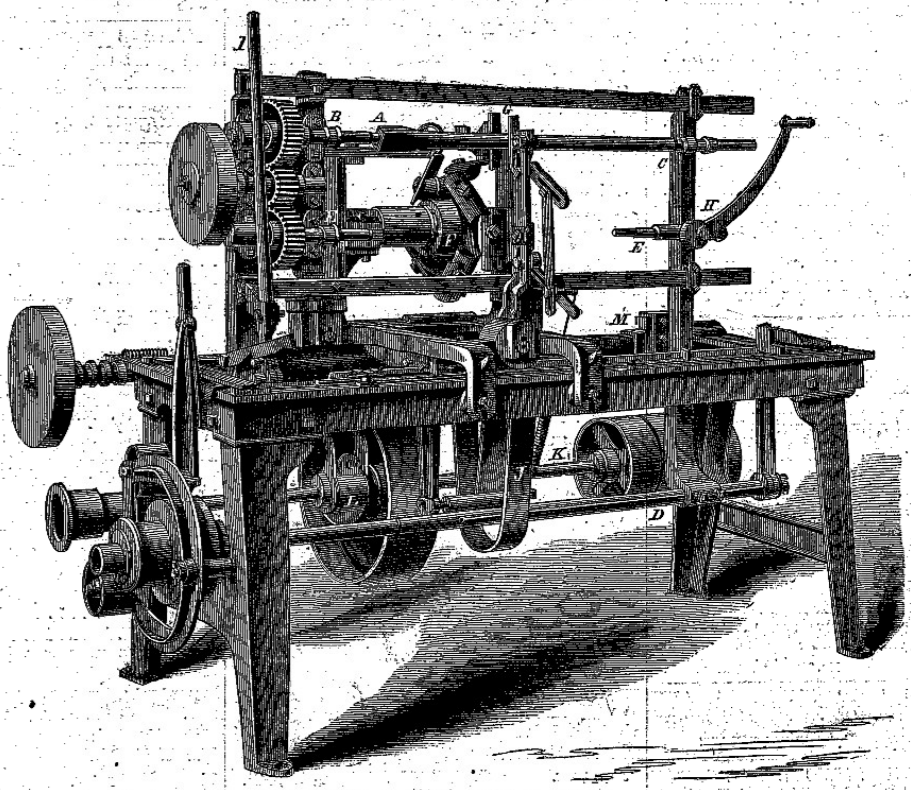


GLEASON'S SPOKE-TURNING LATHE.

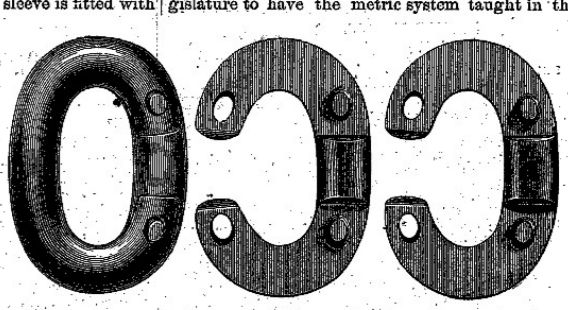
The pulley which drives the cutting wheel above is fitted to the shaft, K, below the frame, and is carried on a cast-iron sleeve which runs in the bearings, L—one on each side. The sleeve is fitted with a feather, and the shaft with a slot, so that the pulley, carriage and wheel can slide along the shaft either when the machine is in motion or at rest, and there is a stop, at M, which prevents the carriage from being run out too far if the feed clutch does not throw out; there is also an arrangement, at N, by which the carriage can be run back when the spoke is done; the check block, M, can be set at any point to hold the carriage in the right position.

These machines are manufactured by J. Gleason, 1,030 Germantown avenue, Philadelphia, to whom all inquiries should be addressed.

Improved Connecting Link.

This is a convenient fixture, in cases of accident, to chain-trace hooks or other appurtenances of a similar nature. Many cases occur in daily life where such an affair would be of immense value. It is simply a cast-iron link, A, divided in two parts, and furnished with studs and holes which receive the same, the whole when put together assuming the form shown in the engraving, where also the detached portions are given. The studs are larger than the link itself and can be riveted over so as to make the link solid. From this elucidation every person will perceive the object of the invention, and also find many uses for it not here enumerated.

It was patented through the Scientific American Patent Agency, by C. J. E. Thompson, of Providence, R. I., on Aug. 5, 1862.



THOMPSON'S CONNECTING LINK.

Progress of the Metric System.

At the meeting of the National Academy at Northampton, Hon. Samuel B. Ruggles gave an account of the result of his attendance at the Berlin conference for investigating and recommending a uniform system of weights and measures. This result was the coinage of the new five-cent piece. This coin weighs five grams with a diameter of 1-50th of a meter. He himself had persuaded the Connecticut Legislature to have the metric system taught in the common schools. Congress has passed a law allowing the metric system to be used. The English had always made objection to it, because it was the fruit of the French Revolution. The third bill of Congress was one ordering the distribution of the measures through the States. The fourth bill allowed the postmasters to use the word gram for ounce. This work was the result of the National Academy. Half of Mr. Fairbank's scales are metric—many of them go to South America, and some to China.

Boys Using Tobacco.

A strong and sensible writer says a good sharp thing, and a true one, too, for boys who use tobacco. It has utterly spoiled and utterly ruined thousands of boys. It tends to softening and weakening of the bones, and it greatly injures the brain, the spinal marrow, and the whole nervous fluid. A boy who smokes early and frequently, or in any way uses large quantities of tobacco, is never known to make a man of much energy, and generally lacks muscular and physical as well as mental power. We would particularly warn boys who want to be anything in the world to shun tobacco as a most baneful poison. It injures the teeth. It produces an unhealthy state of the throat and lungs, hurts the stomach, and blasts the brain and nerve.

TRAVELERS and geologists have been at a loss to account for the origin of the masses of asphalte, sometimes of considerable size, found floating on the water of the Dead Sea. In a paper recently presented to the Academy of Sciences by M. L. Lartet, "On the Deposits of Bitumen in Judea, and on the Asphalte of the Dead Sea," the author states his belief in the existence of a series of hot springs which rise through bituminous limestone, and bring up the asphalte.

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